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ABSTRACT

This project focuses on (a) the empirical findings regarding achievement, cognitive, motivational, and behavioral similarities and differences between the culturally disadvantaged and the more advantaged with learning disabilities, before and after remediation, as well as the changes which accrued from the remedial programs, and (b) discussion of the implications of these findings for some of the basic issues relevant to educating the disadvantaged and the educationally handicapped. The major findings may be summarized as indicating that, under appropriate conditions, the disadvantaged students: (a) learned and performed as effectively as their advantaged counterparts with learning disabilities, and (b) manifested similar basic attitudes concerning the value of education. Taken as a whole, the study is seen as providing evidence in support of the favorable consequences of integration for disadvantaged youngsters and of comprehensive compensatory education programs, as contrasted with piecemeal efforts. (Author/KJ)

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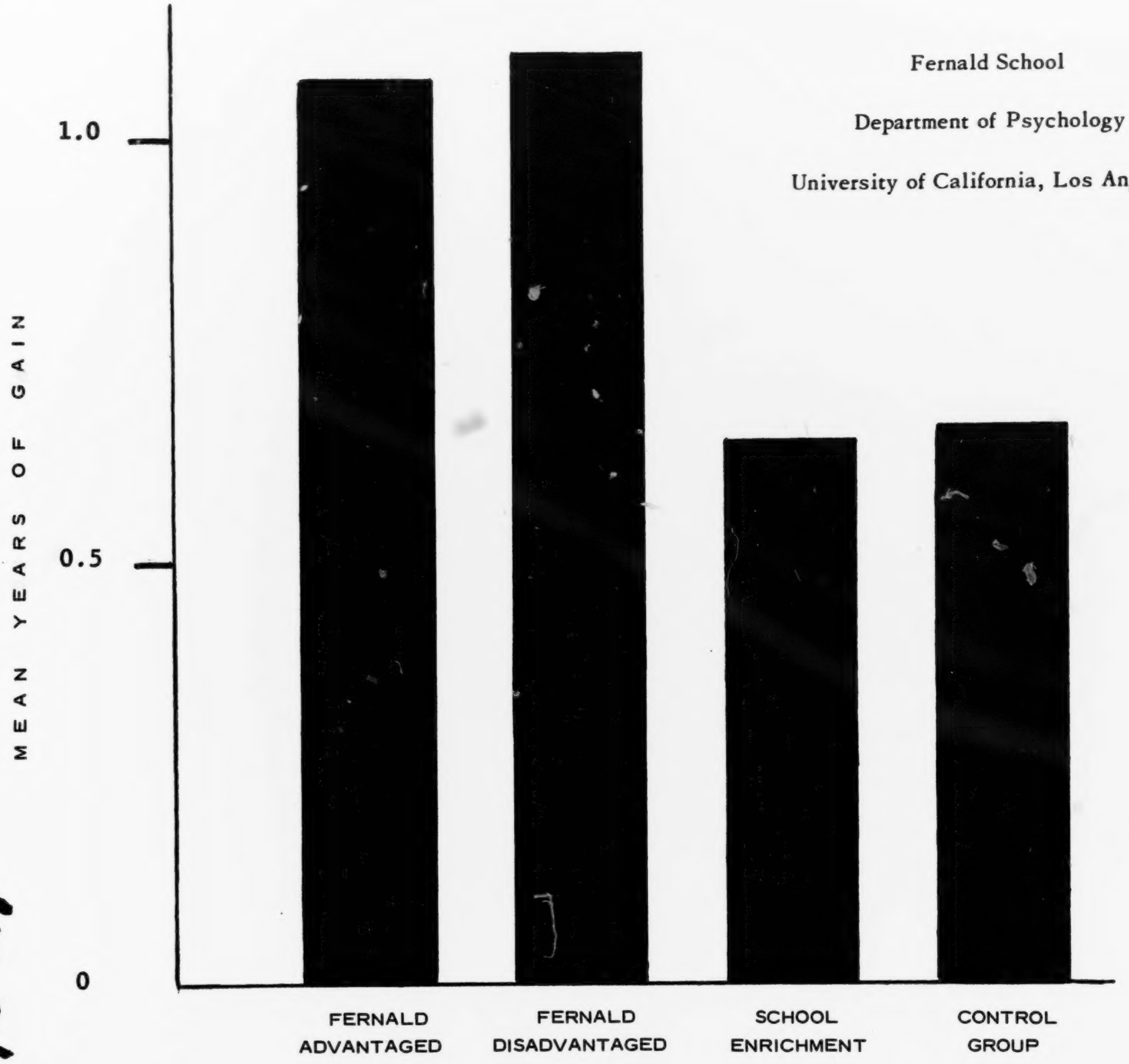
A TRAINING, DEMONSTRATION AND RESEARCH PROGRAM FOR THE REMEDIATION OF LEARNING DISORDERS IN CULTURALLY DISADVANTAGED YOUTH

FINAL REPORT

(in 2 parts)



Fernald School

Department of Psychology

University of California, Los Angeles

Submitted August 31, 1969, in Connection with Project M7–200

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Preface and Acknowledgements

In June, 1966, the staff of the Fernald School (then known as the Psychology Clinic School), with the cooperation of the Los Angeles Unified School District, initiated a training, demonstration, and research project focusing on learning problems among disadvantaged youth. The stated goal of this project was to accomplish two broad objectives: (1) to provide teachers, teachers-in-training, counselors and other professional personnel the opportunity, within the framework of specially designed demonstration programs, to observe and work with children from culturally disadvantaged backgrounds who manifest significant disabilities in learning; and (2) to evaluate the impact of an intensive, individualized remedial program upon the learning skills, aspiration levels and self-attitudes of culturally disadvantaged children. While there have been a number of more specific objectives which have arisen within the framework of these broader goals, the major focus over the past three years has remained on these larger concerns.

This report describes and discusses project-related activities and the implications which may be derived from our experiences and empirical findings, and constitutes a final statement on the first phase of the project--the period from June, 1966, through June, 1969. The report is presented in two parts, with the demonstration and training facets and the research facets presented under separate covers. The discussion of the demonstration and training facets focuses on our efforts to provide effective individualized instruction in special classroom settings and describes the next phase of the project which will incorporate our demonstration, training and research activities directly in the general public school classrooms. The second part of the report presents the research procedures and findings and focuses on basic issues relevant to educating the disadvantaged.

In addition to this report, over the past three years we have prepared a number of special reports on research and other related activities which the project has stimulated. A listing of the special reports currently available can be found at the end of this preface. Other special reports are being prepared and will be available in the near future.

This final report represents the efforts and dedication of a great many individuals who are part of the Fernald School staff or who were associated with the School and/or project during the past three years. The contributions made have been many and diverse. It is not feasible to describe and acknowledge every individual's contribution; however, there are some individuals whose intensive participation in various aspects of the project should not go unmentioned.

At the onset, it should be recognized that a project of this scope and nature would not have been possible without the interest, cooperation, and support of many dedicated professionals in the

State Office of Compensatory Education and in the Los Angeles Unified School District.

Of major importance throughout the project has been the leadership of the supervisory staff of the Fernald School -- especially Dr. Frances Berres, the Associate Head of the School and Associate Project Director; Dr. Howard Adelman, who, in Dr. Berres' absence, served as Acting Assistant Head of the School during the first year of the project and as Associate Project Director throughout the three year period; Mrs. Joyce Allen Eyer, Mrs. Mary Strommer, the late Katherine MacMahon, and Mrs. Shelby Wegner, teaching supervisors; and Dr. Edward Burke, tutorial and project supervisor. Without their foresight, initiative, and also courage, this project would not have been undertaken. Dr. Berres, in her executive-administrative role, helped coordinate the various facets of the project and, in her other roles, contributed many ideas over the course of the project to the research and training programs and gave much support to the children. Dr. Burke took a special interest in the counselor training but also contributed his wisdom to the research evaluation. Mrs. Eyer continued on at the Fernald School, even after retiring as teaching supervisor, and lent her experience and thoughtfulness to many a problem. Mrs. Wegner joined the staff during the last year of the project as teaching supervisor, and the energy and spark she added was well received by the teachers and children. Dr. Adelman participated in every phase of the project -- in the counselor and teaching program, in the implementation of the project, in the evaluation, and in the preparation of the reports. His energy, ideas, attention to detail and to overall process contributed in countless and indispensable ways to the project. He clearly must share the responsibility as well as the credit.

In a very real sense, the teachers were the core of this project. They were most intimately involved with the children, worked very hard and very patiently, and became closely attached to them. In enumerating the list of teachers, one should not lose sight of the ideas, concerns and unique contribution of each: Mrs. Amy Droke, Mrs. Gail Ennis, Mrs. Jeanne Fryer, Mrs. Glenda Gay, Mrs. Arlene Ingber, Mr. Harry Rosemond, Mr. Jerome Squire, and Miss Toby Talbot. During the final year of the project, they were assisted by Mrs. Mike Cannon, Mrs. Joan Lizer, Miss Virginia Nail, and Mrs. Gloria Nimmer. Mr. Kent Newell, assisted by his staff, was responsible for the physical education program. The process of integration -- both the friction and the cement -- could be readily observed on the playing field. Integration could also be readily observed in the creative and inspiring art program conducted by Mr. John Otterson.

The teachers in the Enrichment program had a difficult task, being partially isolated from the Fernald School and also not being quite part of the child's home school. Nevertheless, they maintained their interest and enthusiasm. In this group of teachers were Mrs. Marian Charnas Brown, Mrs. Lynn Copes, Mrs. Louise Fields, Mrs. Susan Kapitanoff, Mrs. Rita Knipe, Mrs. Belle Mason, and finally, Mr. Scott O'Leary, who supervised a well-organized, intensive Enrichment program during the final year of the project.

We were most fortunate in having a group of mature and dedicated University students, including graduate students in Social Work, Psychology, and Education. These students participated in family and social contacts and in various therapeutic and educational programs with the children and, in general, displayed interest and effort which went far beyond that required to meet student needs and obligations. The graduate students were fortunate in having as their supervisors: Miss Jane Bullions, who was a bulwark of devotion and resourcefulness during the entire tenure of the project; Mrs. Sarita Unger, a more recent addition to the social work staff who quickly became involved in the School and the project and was most helpful; and Dr. Bruce Rubenstein, who, in addition to his training activities, brought many stimulating ideas to the research program as well as to the psycho-educational facets of the project.

Four other individuals who contributed importantly were Mr. John Long, Mr. Will Fuller, Mr. John Simpson, and Mr. David Whaley. Mr. Long participated in two capacities -- as a graduate student and as a research assistant. He actually functioned in many capacities -- counselor to the boys, interviewer, statistical analyst -- perhaps most descriptively as a general trouble shooter. His involvement and ready participation during the initial and subsequent periods of the project were both substantial and generous. Mr. Fuller, who technically held the title of research assistant, spent many late evening hours at the computer center as well as day-light hours at the School. The excellent job he did of preparing the statistical analysis and computer output greatly facilitated the preparation of the final report. More importantly, however, his participation throughout every facet of the evaluation process and his helpfulness in most other facets of the program can only be described as outstanding. Mr. Simpson was responsible for much of the statistical analysis and computation during the first two years of the project and provided valuable consultation during the third year. Mr. Whaley joined the staff as our media specialist during the third year and, like so many of the others, he soon found himself immersed in, and helping with, almost every facet of the project.

Finally, but not least, there are the unsung secretarial and clerical associates who carry out a great many tasks besides what their job titles convey. Mrs. Marilyn Ehrenberg functions as Administrative Assistant of the Fernald School and helped resolve budgetary, personnel, and other problems. Miss Barbara Mooney and Miss Susan Fielding served as project secretaries. Their respective cooperativeness, patience, tolerance and devotion to the project are gratefully acknowledged.

Seymour Feshbach, Ph. D.
Project Director

Special Reports (currently available)

"Variations in teacher's reinforcement style and imitative behavior of children differing in personality characteristics and social background."

"Books and the culturally disadvantaged child."

"The effects of varying amount of motoric involvement on the learning of nonsense dissyllables by male culturally disadvantaged readers." (Summary and conclusions of dissertation)

"Some thoughts on research and program development for 'culturally disadvantaged' (and other exceptional) children."

"Negro representation in trade books written for young people: a qualitative analysis."

Abstract

In recent years, there has been an increasing number of programs aimed at the remediation of the learning problems of the culturally disadvantaged. Implicit in many of these programs has been the assumption that such remediation should differ qualitatively and quantitatively from remedial programs for the culturally advantaged. In an effort to help clarify the similarities and differences in working with such a population, this report presents some of the findings from a three year demonstration, training, and research project which was carried on simultaneously at the Fernald School, UCLA, and in the Los Angeles Unified School District. This project has focused on the remediation of learning disabilities in culturally disadvantaged, as contrasted with more advantaged, youngsters who are labeled educationally handicapped in the State of California.

Specifically, the presentation focuses on: (a) the empirical findings regarding achievement, cognitive, motivational, and behavioral similarities and differences between the two populations before and after remediation, as well as the changes which accrued from the remedial programs, and (b) discussion of the implications of these findings for some of the basic issues relevant to educating the disadvantaged and the educationally handicapped.

The major findings may be summarized as indicating that, under appropriate conditions, the disadvantaged students (a) learned and performed as effectively as their more advantaged counterparts with learning deficits and (b) manifested similar basic attitudes concerned the value of education. Taken as a whole, the study is seen as providing evidence in support of the favorable consequences of integration for disadvantaged youngsters and of comprehensive compensatory education programs, as contrasted with piecemeal efforts.

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A Training, Demonstration and Research Program for the Remediation of Learning Disorders in Culturally Disadvantaged Youth

Research Findings

For the past three years, the Fernald School at U.C.L.A. has undertaken a research, demonstration and training program concerned with the remediation of learning problems in culturally disadvantage children. The present paper focuses on some of the key psychological and educational issues which have been generated in the course of this program, particularly by the research findings. These findings, and the broader issues to which they relate, will be considered after the research procedures have been reviewed. The procedures employed in the counselor training program and the evaluation of that program are presented in a separate report. More detailed descriptions of the remedial procedures used and of the children's educational activities and products are also presented in separate reports.

I. Description of Project

A. Introduction

The research program of the project was designed to meet the following broad objective: to evaluate the impact of an intensive, individualized remedial program upon the learning skills, aspiration levels and self-attitudes of culturally disadvantaged children who manifest significant disabilities in learning.

Within the framework of this broader objective, there were a number of specific questions to which the project was addressed. One primary interest was in determining whether the learning problems presented by a culturally disadvantaged population were fundamentally different in character than the learning problems presented by the middle class population who constitute the basic source of most of our information about learning disorders; that is, whether disadvantaged children who are similar in intellectual ability to a group of advantaged children with learning difficulties and, who like them, are functioning significantly below grade level in basic skills, differ in other aspects of intellectual functioning or in personality and motivational attributes associated with the learning problem. There is a tendency to treat the culturally disadvantaged as if they constituted a homogeneous group with educational problems and cognitive "habits" quite distinct from more advantaged groups who present phenotypically similar learning problems. This may or may not be the case and is certainly an issue regarding which more definitive data is needed.

At the same time, we hoped to obtain additional insight into the processes which interfere with the acquisition of such basic skills as reading and arithmetic manipulation. Knowledge of the factors which prevent an ostensibly intelligent and neurologically intact child from developing skill in reading is extremely limited and tends to be rather superficially related to the problem; e.g., the assertion that a child has an "emotional block" is almost a statement of the difficulty. A long-term aim of the project is a more precise analysis of the manner in which difficulties in attention, memory and motivation interfere with the acquisition of basic skills in reading, arithmetic and language arts. A comparison of culturally disadvantaged and more advantaged youngsters with respect to these processes might reflect significant differences in basic processes mediating learning difficulties in these two groups and, as a consequence, suggest the use of specific remedial procedures appropriate to culturally disadvantaged children.

The question of diagnostic differences between disadvantaged and advantaged children with learning disorders is intimately associated with issues of remediation: specifically, whether different remedial procedures are required for these different populations. It is uncertain as to whether disadvantaged children with learning difficulties will respond favorably to the same kind of remedial program that has proved relatively effective for advantaged children with learning problems.

Several aspects of the project bear upon the problem of remediation. The over-all impact on a sample of disadvantaged children of the remedial setting provided by the Fernald School was compared to the remedial effects obtained for a comparable sample of advantaged children. The major emphasis of this setting is upon the individuation of instruction, the remedial methods to be used depending upon the needs of each child. After attempting to assess the nature and extent of the learning disability, an individual program is established. For example, in the case of a reading problem, some children might be taught with the kinesthetic methods, others with linguistic methods, and still others might be given perceptual-motor training. In addition to determining individual methods of instruction, specific learning goals are established for each child. These goals are set so as to permit the child to experience successes in a learning task which has previously provided him with consistent failure. Considerable emphasis is placed upon positive reinforcement and the provision of a non-punitive learning environment, and a particular effort is made to exclude the use of the kinds of negative reinforcers and criticism which tend to lead to self-devaluation and feelings of incompetence in the child.

In addition to evaluating the effectiveness of this broad, individualized instructional program, a number of systematic experimental studies varying incentives and instructional techniques in restricted experimental learning situations were carried out. The results of several of these studies have already been presented in Special Reports describing the procedure and outcome of a particular experiment. Other special reports are currently being prepared and will shortly be available.

Comparisons between the advantaged and disadvantaged youngsters provide one important source of data bearing upon the principal objectives of the project. Of equal, if not greater importance, are comparisons among three samples of disadvantaged children - a group who attends the Fernald School, an "Enrichment" group that remains in its own neighborhood school but receives a special remedial program and a "Control group" that does not receive any special treatment. The Controls were free to participate, however, in special programs provided by the school or the community. The inclusion of the Enrichment and Control groups permits a systematic, controlled evaluation of the effectiveness of the Fernald School setting and program for culturally disadvantaged youngsters. It might be argued that if the Fernald School group should manifest more dramatic and substantial changes than the other groups, the social utility of this finding would be limited because of the expense of duplicating this kind of educational facility. However, the demonstration of the possibility of such changes in itself, would be of considerable value. If we know that, given the proper conditions, it is possible to bring about significant changes in basic skills and perhaps even in I.Q., we can then set our sights accordingly. The effectiveness of the Enrichment program is of particular social interest since this program is carried out in the child's own neighborhood school.

In addition to changes in academic skills, there was also interest in evaluating changes that might occur in self-attitudes, achievement striving, and educational aspirations. The Fernald School sample further provided the opportunity to study the social interaction among the culturally disadvantaged and advantaged groups, and changes in attitudes that might ensue. In a very real sense, the Fernald School experience can be examined from the viewpoint of the effects of integration, and some of the data to be obtained will bear on that issue.

B. Outline of Research Procedures

1. Subjects

The students who participated in the project met the following criteria. They all were:

(a) male;

(b) of at least average intelligence (in a few instances, a youngster with an I.Q. in the high 80's was included if the data in his records suggested that the I.Q. indicated might underestimate his true ability);

(c) one and one-half or more years retarded in basic school skills;

(d) without severe neurological or severe emotional disturbances.

In addition, the disadvantaged students had to live in an area which was designated as a poverty pocket, i.e., in which the average family income was approximately $3,000 a year. (We recognize that the economic criterion does not adequately define the concept of culturally disadvantaged as this term has come to be used in current literature. Nevertheless, income is undoubtedly the best single criterion and predictor of a culturally disadvantaged condition.) These children were chosen from a list which the counselors at each school prepared to conform with the above criteria. From these lists, the project staff selected different children for participation in the project during the summers of 1966 and 1967 and during the academic years 1966-67, 1967-68, and 1968-69. During each summer program, 40 students were bussed to the Fernald School. Two-thirds of the students selected were Negroes while the remaining third were divided between Mexican-Americans and so-called Anglos. During the first academic year, 60 disadvantaged youngsters participated in the study; during the subsequent two years, 80 disadvantaged youngsters participated. In each of these years, approximately 90% were Negroes.

The advantaged students were all selected from the tuition-paying clients enrolled in the Fernald School classroom programs. With few exceptions, these students were middle or upper class Anglos.

2. Design

Tables 1 and 2 present the numbers of students assigned to the various experimental and control groups for the summer and academic year projects and indicate the schools from which they were selected.

For each summer program, the disadvantaged sample was matched with a group of advantaged children for age, I.Q., and achievement. Group I.Q. scores, available from school records, were used for initial matching for intelligence. The California Achievement Test was used to match the group for basic reading, language arts, and arithmetic levels. The children at each age level were distributed over seven separate classes.

During the first year of the project, the disadvantaged youngsters selected were grouped into triplets, matched for age, I.Q., race and severity of learning disability. From each triplet, one student was randomly assigned to the Fernald School group, another student to the School Enrichment Program which was conducted in the home schools, and the third was assigned to a Control group. Then, a group of advantaged youngsters was selected from the regular Fernald School population to form a fourth, comparison group, matched for age, learning disability and approximate I.Q. with the disadvantaged samples.

In the second year of the program, while we followed this same general design and procedure, there were several changes. First, the

Table 1

NUMBER OF STUDENTS INITIALLY ASSIGNED TO FERNALD SCHOOL SUMMER PROGRAM[1]

SUMMER, 1966

	Elem.	Jr. High
DISADVANTAGED (from 37th St. and 10th St. Elementary Schools and Mark Twain Jr. High School)	20	20
ADVANTAGED (Fernald School summer enrollment)	20	20

SUMMER, 1967

	Elem.	Jr. High
DISADVANTAGED (from Vermont Ave, Elementary School and Foshay Junior High School)	20	20
ADVANTAGED (Fernald School summer enrollment)	20	20

---

[1] There was some minor attrition resulting from students leaving the schools for various reasons.

Table 2

NUMBER OF STUDENTS INITIALLY ASSIGNED TO FERNALD SCHOOL, SCHOOL ENRICHMENT, AND CONTROL GROUPS[1]

ACADEMIC YEAR, 1966-67

		Elem.	Jr. High
DISADVANTAGED (from Broadway Elementary School and Mark Twain Junior High School)	Fernald School Program	10	10
	School Enrichment Program	10	10
	Control Group	10	10
ADVANTAGED (from Fernald School regular enrollment)	Fernald School Program	10	10

ACADEMIC YEAR, 1967-68

		Elem.	Jr. High
DISADVANTAGED (from Vermont Ave. and 37th St. Elementary Schools and Foshay Jr. High School)	Fernald School Program	10	10
	School Enrichment Program	20	10
	Control Group	20	10
ADVANTAGED (from Fernald School regular enrollment)	Fernald School Program	10	10

ACADEMIC YEAR, 1968-69

		Elem.	Jr. High
DISADVANTAGED (from Vermont Ave. and 37th St. Elementary Schools and Foshay Jr. High School)	Fernald School Program	10	10
	School Enrichment Program	20	10
	Control Group	20	10
ADVANTAGED (from Fernald School regular enrollment	Fernald School Program	10	10

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[1] The specific changes in sample size resulting from attrition will be discussed subsequently.

number of students in the School Enrichment and Control groups was increased. A second change was that three rather than two public schools were included in the project. And third, these three public schools were in a different section of Los Angeles City, i.e., in the first year, the students had come from the Venice area which is on the Western boundary of the city and in the second year they came from mid-city.

Again, in the third year, we employed the same design and procedures and drew our sample from mid-city. Also, the number of students in the various groups was maintained at the same level as in the second year. The only major change which occurred with regard to the sample was that at Fernald four of the twenty disadvantaged students (2 elementary and 2 junior high students) were students who had been in the Fernald sample during the previous year. Thus, only sixteen of the twenty disadvantaged students attending Fernald during the third year were new students. (Since, as is often the case with many of our advantaged youngsters with learning problems, additional remediation was indicated for a number of the second year's students, it was felt that allowing four representative disadvantaged students to return would not only help them but would allow for an exploratory evaluation of the impact of a second year of remediation.)

3. Measures

Various combinations of measures have been used during each of the evaluation periods. Some of these measures were used only once during an evaluation period, others were given at the beginning and end of such a period.

The relevant instruments which were used one or more times during the three years of the project are listed below, and the different patterns of administration are presented in Table 3.

(1) California Achievement Test

(2) Test Anxiety Scale for Children

(3) Expectancy of Success Instrument

(4) Vocational Checklist -- boys' form

(5) Ethnic Attitudes Instrument

(6) Sociometric Instrument

(7) Semantic Differential

(8) Full Range Picture Vocabulary Test (FRVP or Ammons)

(9) Visual Motor Gestalt Test (VMGT or Bender)

(10) Coloured and Standard Progressive Matrices (Raven)

(11) Auditory Discrimination Test (ADT or Wepman)

(12) Extrinsic-Intrinsic Motivation Scale

(13) Locus of Control Scale

(14) Teacher Ratings

(15) Witkin Rod and Frame Test

(16) Wechsler Intelligence Scale for Children (WISC)

(17) Frostig Developmental Test of Visual Perception (Frostig)

(18) Attitude Survey (AS)

A brief discussion of each of these measures as used at the Fernald School follows. It should be noted that due to current administrative policies in the Los Angeles City School District, some variations in procedure were required in administering these measures to the School Enrichment and Control groups, and, indeed,

Table 3

ONE-TIME MEASURES	Summer 1966	School Year 1966-7	Summer 1967	School Year 1967-68	School Year 1968-69
Full Range Picture Vocabulary Test	FS				
Extrinsic-Intrinsci Motivation Scale	FS	FS			
The Coloured and Standard Progressive Matrices	FS(E)	A	FS		
Teacher Rating (Meyer's)		FS			
Witkin Rod and Frame Test		A		A	
Locus of Control			FS	A	A
Frostig Developmental Test of Visual Perception				E	E
Wechsler Intelligence Scale for Children (Short Form)				A	A

PRE-POST MEASURES	Summer 1966	School Year 1966-67	Summer 1967	School Year 1967-68	School Year 1968-69
Semantic Differential	FS	A			
Expectancy of Success	FS	A	FS		
Visual Motor Gestalt Test	FS*			E	E
California Achievement Test	FS	A	FS	A	A
Test Anxiety Scale for Children	FS	A	FS	A	A
Sociometric Instrument	FS*	FS(A)*	FS	FS	FS
Auditory Discrimination Test		A*		E	E
Vocational Checklist		A	FS	A	A
Ethnic Attitudes Instrument		A*	FS	A	A
Attitude Survey				A	A
Wechsler Intelligence Scale for Children (C, A, V only)				A	A

KEY:
A = All students
E = Elementary students only
FS = Students at Fernald School only (both Advantaged and Disadvantaged)
* = One-time measure this evaluation period only

some instruments could not be given at all to these two groups. Other reasons for changes in the assessment procedures were: (1) if a measure proved to be unreliable and to have limited utility; and (2) if certain supplementary studies required the addition of particular measures.

1. California Achievement Test (CAT). This test is a standard achievement test (Tiegs and Clark, 1957, with norms revised in 1963) which is administered throughout the Los Angeles City School District. The battery consists of appropriately reliable and valid tests of skills and understanding in reading, arithmetic and language. There is a separate level for each battery ranging from the lower primary grades through high school so that tests may be administered at appropriate grade levels. In addition, different forms are available at each level to facilitate retesting.

Each battery required approximately three hours to administer and all administrations were done on a group basis with students marking their answers in the test booklets. Where information was available pointing to a large discrepancy between a student's chronological grade level and his actual reading ability, he was given the level of the test which corresponded to his reading level.

Scoring procedures are outlined in the test manual; raw scores for each student were converted into grade placements using the 1963 norms.

2. Test Anxiety Scale for Children (TASC). This test was developed by Seymour Sarason and his associates (Sarason, Davidson, Lighthall,

Waite, and Ruebush, 1960). It consists of 30 questions all specifically designed to deal with anxiety in the school setting; it has been found to have an encouraging degree of construct validity. The scale and the instructions used in this study are included in Appendix 1.

The test was administered on a group basis and required approximately 10 minutes per class. To compensate for differences in reading ability, each item was read aloud and all the student had to do was to circle yes or no on the answer sheet.

With regard to scoring, the higher the percentage of yes answers, the higher the degree of apparent anxiety and concern about academic achievement, examinations and related school matters.

3. Expectancy of Success (Ex). The expectancy scale used in this study has been used in several earlier studies with encouraging results (Adelman, 1969; V. Crandall, 1963; V. Crandall, Good, and V. J. Crandall, 1964). In the current study, there has been an attempt to use a modified version of this scale to evaluate differences and changes in generalized expectations of success and expectations of success in specific areas, i.e., reading, mathematics, art, music, physical activities, and peer relationships. The scale itself consists of a sheet of paper with 50 small stick figures drawn in a vertical line down the center of the sheet. The top figure is labeled "BEST" and the bottom figure is labeled "WORST". In substance, the instructions called for each student to compare himself with all the other persons in the city of the same age as himself, remembering

that some people do very well, e.g., read very well, and others do very poorly; the average person was said to be somewhere in the middle of the scale.

The test was administered on a group basis and required approximately 15 minutes per class. To compensate for differences in reading ability, age, and general capability in coping with such a task, all instructions were read aloud and the student had to simply circle the stick figure which represented the person he thought he would turn out to be if he compared himself to the others his age on the specific task or activity described.

Each student's score was computed by numbering the stick figures from 1 thorugh 50. Thus, if he circled the top figure he was assigned a score of 1 (the best), if he circled the bottom, he was assigned a score of 50 (the worst, etc.). Meaningful change scores were facilitated by handing back to each student his responses on the premeasure (unscored) so that he could see how he had responded at the beginning of the school session.

4. Vocational Checklist (VC). This checklist was taken from the Educational Vocational Checklist developed by the Bureau of Educational Research, Board of Education of the City of New York and was used in an earlier study of vocational aspirations by Wrightstone and his associates (Wrightstone, Forlano, Lewis, Turner, and Bolger, 1964). It consists primarily of 10 sets of five occupational titles each of which represents different skill levels. The scale and the instructions used in this study are included in Appendix 2.

The boys' form of the checklist was administered on a group basis and required approximately 15 minutes per class. To compensate for differences in reading ability, each item was read aloud and all the student had to do was to check his choice.

A seven point scale, adopted from the work of Hollingshead and Redlich (1958), was used in scoring; values ranged from 1 (professional) to 7 (unskilled). Thus, each student's score could range from 10 (all professional choices) to 70 (all unskilled choices).

5. Ethnic Attitudes Instrument (EA). This measure was adopted from the McAteer-funded research project underway at the University of California, Riverside. The instrument is an indirect measure used to investigate attitudes toward members of different racial minority groups. It consists of two series of six pictures, two each of "Anglo"--Caucasian, Mexican-American, and Negro elementary school children; one series is all boys, the second is all girls.

Each series of six pictures was shown simultaneously to a class by means of a slide projector; the boys' series was shown first. Each student was asked to rank order the pictures from 1 to 5 with reference to each of five adjectives. The adjectives are: "kindest", "happiest", "strongest", "fastest", and "best grades". For example, the student was asked to look at the six pictures and pick the kindest and indicate him as his first choice, the second kindest, etc. Total administration time was approximately twenty minutes.

Three scores are derived for each subject: an "Anglo" score, a Mexican-American score, and a Negro score. These scores are based on a five point scale, with five points being assigned for a first choice, four for a second, etc., the maximum score being nine.

6. Sociometric Instrument (SI). In contrast to the Ethnic Attitudes Instrument, the sociometric measure was included as a means of investigating attitudes toward known rather than anonymous others. It consisted of three questions focusing on each student's preference with regard to those he would most like to sit next to, most like to play with on the playground, and most like to invite home.

The questions were presented simultaneously to the whole class, and the students were asked to select a first, second, and a third choice from the members of the class in which they were currently enrolled. To help those children who might have trouble spelling and writing names, several adults circulated through the class aiding those students who requested assistance. Total administration time was approximately 15 minutes per class.

The two key scores were the number of disadvantaged children chosen by a child, and the mean number of times a child was selected by members of the disadvantaged group and members of the advantaged group.

7. Semantic Differential (SD). The Semantic Differential (Osgood, 1957) was adapted for this study in an attempt to investigate a number of significant personal and social attitudes. Thirteen concepts were included: TEACHER, ME, POLICEMAN, NEGRO, MEXICAN, WHITE MAN, SCHOOL, READING, HOMEWORK, ARITHMETIC, FAILURE, FIGHTING. These concepts are rated on a seven point scale with reference to 11 pairs

of polar adjectives: difficult-easy, honest-dishonest, strong-weak, clean-dirty, sad-happy, warm-cold, stupid-smart, good-bad, fair-unfair, cruel-kind, white-black. The concepts and the polar pairs were randomly scattered, rather than systematically presented, over fifteen mimeographed pages.

The measure was administered on a group basis and required approximately 30 minutes per class. To compensate for difference in reading ability, the items were read aloud, allowing about five seconds per item; all the student had to do was to place a check mark on the scale.

Several scores can be derived from this instrument. The current group comparisons required an averaging over subject and group for each concept and scale pair.

8. Full Range Picture Vocabulary Test (FRPV or Ammons). This test is an individual measure of intelligence based on verbal comprehension and requiring no reading or writing on the part of the testee (Ammons, 1948). The test consists of 16 cards, on each of which there are four cartoon-like drawings. The examiner reads a word from a list and the student is asked to indicate which of the four drawings best represents the particular word. Test administration takes 5 to 10 minutes.

Each response is checked as right or wrong and the total number of rights provides the raw score. Raw scores may be converted into mental age expressed in years. The test has norms for chronological age 2 through adult level and there are two forms to facilitate retesting; reliability and validity are satisfactory.

9. Visual Motor Gestalt Test (VMGT or Bender). This test (Bender, 1946) is a widely used measure of disturbances in perceptual-motor functioning. It consists of nine patterns which are offered to the individual with instructions to examine and copy each one at a time.

The test was administered individually and required approximately 15 minutes per student.

A scoring method was derived from the work of Pascal and Suttell (1951), Koppitz (1964) and Keogh (1968) and was used to obtain a quantitative index of the degree of malfunctioning, higher scores indicating greater disturbance.

10. Coloured and Standard Progressive Matrices (Raven). The progressive matrices measures (Raven, 1965) are cross cultural perceptual tests used to assess cognitive functioning or as the author suggests, it is "a test of observation and clear thinking". The tests consist of sets of problems which involve selecting one piece to complete an overall pattern from a number of alternatives; all of the choices are the same shape but are different in pattern. The coloured matrices were used with the younger children, the standard with the older ones, as suggested by the author.

The test was administered on a group basis using the book form and took from 20 to 45 minutes depending on the pace of individual students. To compensate for differences in age and general capability of handling such a group-administered test, several adults circulated through the class to be certain instructions were understood and followed. All the student had to do was write down the number of the piece he had selected.

Raw scores (the number right) can be converted into percentile grades, ranging from I through V, with I being intellectually superior (above the 95th percentile for his age group) and V being intellectually defective (below the 5th percentile for his age group). The Coloured Progressive Matrices Test has norms for elementary age school children; the Standard Progressive Matrices Test has norms for older children. The reliability and validity of both tests are satisfactory.

11. Auditory Discrimination Test (ADT or Wepman). This test is designed to determine "a child's ability to recognize the fine differences that exist between the phonemes used in English speech" (Wepman, 1958). It consists of 40 paired words, "same" pairs and "different" pairs, which are read to the student.

The test is individually administered and all the student has to do is to indicate whether the words read are the same or different.

The test is scored with reference to the number of times pairs that were different were labeled "same" and pairs that were the same were labeled "different". The latter type of error is used as an index of test validity, i.e., a test with more than 3 errors of this type is put aside as invalid. Only the former type of errors determines the level of auditory discrimination. These raw scores are used in conjunction with the test norms which are available for 5-8 year olds. There are two forms of the test to facilitate retesting; reliability and validity are satisfactory.

12. Extrinsic-Intrinsic Motivator Scale (E-I). This scale was developed by Heywood and Peabody, and is designed to assess whether a child is more influenced by internal or external motivators in his decisions. The test consists of twenty pairs of occupations; the student is asked to choose one occupation from each pair and give the reason for his choice. The scale is included in Appendix 3.

The test was group-administered, and to compensate for those students who might have difficulty writing out their own responses, extra personnel were made available who would write out responses upon request.

The scoring of each student's reasons yielded the indices of intrinsic and extrinsic motivation. Intrinsic choices included all those based on reasons of aesthetics, achievement, creativity, responsibility, and psychological stimulation. The extrinsic category refers to any reason based on salary, status, ease, quiet, comfort, safety, security, and familiarity. A reliability check on the scoring was conducted and indicated high agreement between two independent scorers.

13. Locus of Control Scale (LC). This scale was devised by Cromwell and his associates (1961) on the basis of the earlier work of Phares (1955) and James (1957). It was designed to evaluate children's feelings of self responsibility in influencing the outcomes of various situations, i.e., the degree to which they believe the

reinforcements they receive are a product of their own actions or are due to chance factors. The scale consists of 48 questions covering a wide range of personal and social situations; it is included in Appendix 4.

The test was administered on a group basis and required approximately 20 minutes per class. To compensate for differences in reading ability, each item was read aloud and all the student had to do was to circle yes or no on the answer sheet.

14. Teacher Ratings. The Meyer's Behavior Observation Guide was used by the Fernald School teachers to provide data for group comparisons on such factors as attention, effort displayed, impulsivity, etc. The scale consists of 12 items which are rated from 1-9. The Guide is included in Appendix 5.

The student's score is derived by assigning the scaled score as checked for each item, and the group comparisons are made with reference to the individual items.

15. Witkin Rod and Frame Test. This test -- developed by Witkin and his associates (1962) -- was adopted from the McAteer-funded research project underway at the University of California, Riverside. This instrument is used to assess an individual's dependence on the surrounding visual-field.

The apparatus consists of a box which is approximately 4' X 2' X 2'. The test was administered individually and required approximately 15 minutes per student. Each student was asked to sit in a chair in front of the box with his face pressed tightly against a "seeing" hole. The inside of the box is painted black, and all that can be seen is a greenish square (the frame) at the opposite end in which there is a small figure of a man. The subject has a knob by which he can move the figure and he is instructed to keep the little man standing straight even though the square is tilted.

The frame is tilted in four different ways and scores are obtained. The chair is then tilted to the right and scores are again obtained for the four different frame settings. Finally, the chair is tilted to the left and scores again are obtained for the four frame positions.

16. Wechsler Intelligence Scale for Children (WISC). The WISC is a well-established intelligence test, the children's counterpart of the Wechsler Adult Intelligence Scale (WAIS) developed by David Wechsler from the Wechsler-Bellevue Intelligence Scales. In taking the WISC, the child responds verbally to questions from the examiner or, on the Performance section, manipulates pictures, blocks and other objects to demonstrate his capacities for logical organization in a non-verbal manner.

Based on the work of Enburg, Rowley and Stone (1961), and Carleton and Stacey(1954), a short form of the WISC, including six of the ten standard subtests, wss administered. The six subtests were: Comprehension, Arithmetic, Similarities and Vocabulary from the Verbal section; and Picture Arrangement and Block Design from the Performance section. Scale scores on subtests were obtained, as well as a verbal I.Q. based on the four verbal subtests and a short-form

I.Q. based on all six subtests.

The test was administered individually, taking about 45 minutes. At the end of the year, Comprehension, Arithmetic and Vocabulary subtests were re-administered to allow for pre-post comparison in these specific areas.

17. Marianne Frostig Developmental Test of Visual Perception (Frostig). This test was developed by Marianne Frostig (Frostig et al., 1964) to measure visual perception in kindergarten and elementary-age children. Five operationally-defined perceptual skills are tested: 1) eye-motor coordination; 2) figure-ground perception; 3) shape constancy recognition; 4) perception of position in space; and 5) perception of simple spatial relations.

The test was administered individually and requires approximately 45 minutes. In taking the test, the child performs various paper-and-pencil tasks in a test booklet, such as drawing straight lines between boundaries of varying widths, or outlining geometric shapes hidden against increasingly complex backgrounds.

Raw scores were converted to Perceptual-age Equivalents in each of the five areas, using tables in the scoring manual (Frostig, Lefever and Whittlesey, 1966). Perceptual-age was then divided by chronological age and the result adjusted to give a Scale Score for each area ranging from 1 to 10. The sum of the five scale scores was used as a rough indication of the child's perceptual functioning. (A scale score below the maximum of 10 in any area indicates possible perceptual difficulty in that area.)

18. Attitude Survey (AS). This measure is a detailed questionnaire dealing with the student's attitudes in four major areas of his school activities: classwork, sports, behavior toward authority, and peer relations.

In taking the attitude questionnaire, the student was asked to give his opinion on how much he likes a given activity (e.g., reading), how well he does at the activity, and how he ranks his ability in the activity compared to that of the other boys in his class. At the Fernald School the student was also asked to rank himself compared to the boys in classes at the school he attended prior to coming to Fernald.

No writing or reading was required of the student. Each question was read to him, with standardized explanatory comments where appropriate, and he indicated his response on a 25-point ordinal scale by checking or circling the point that best showed his opinion. The questionnaires were administed individually, taking from one-half hour to 45 minutes to administer.

Parallel shorter questionnaires were given to teachers, parents and, at the Fernald School, coaches, for comparison with the student's self-evaluation. All questionnaires were given both in the Fall and Spring.

II. Results

A. Introduction

There are a number of issues to which this report was addressed and others which arose during the course of the three years over which the study took place. These issues range from the nature of the learning problems presented by the disadvantaged child and his response to systematic remediation, to the function and meaning of a socially integrated educational experience oriented to the individual needs of children. The issues are complex; the variables involved are many; the methodology is imperfect. While we have relied heavily on quantitative procedures, caution must be exercised in making inferences lest the importance of the numbers be exaggerated. We are not arguing against the use of quantitative methods in evaluating the effects of an educational experience; quite the contrary, we believe that the use of such procedures is critical. What must be kept in mind is that they are limited. Our available measuring instruments can only capture a restricted segment of the behavior being assessed. Reading achievement tests reflect only a part of a child's achievement in reading; our measure of vocational aspiration only taps the surface of the child's feelings about his vocational options and likely future. And there are domains of behavior which are not assessed at all, but which both teacher and child may perceive as significant.

To partially compensate for the dryness and, more particularly, for the limitations of our quantitative analyses, we have incorporated a number of qualitative observations and products in this segment and in other parts of the over-all report. While the quantitative analyses, albeit limited, can stand by themselves, the qualitative cannot. The latter must be interpreted in conjunction with the numerical findings.

B. Academic Year Experimental Programs

1. Ages and I.Q.'s

Before reviewing the major experimental findings, it will be helpful to consider some of the characteristics of our experimental samples. The number of subjects in each experimental group who participated in at least one pre-post measure is presented by school year, and for all three years, in Table 4. As is almost inevitable in a field study of this kind, the number of subjects who completed the study differs from the number initially selected. At the same time, the loss in subjects is not very severe.

In the Advantaged group, there are actually a few more subjects than the number which had been planned. These were added, largely in the first year, because they were available and also improved the matching. Turning to the Disadvantaged samples, the number of children who remained in the Fernald Disadvantaged sample is impressive. Fifty-six out of 60 children completed their experimental year at the Fernald School. The loss in the School Enrichment and Control groups was greater but tolerable. Of the 80 children which the design called for in each of these groups, 71 of the School Enrichment and 67 of the Controls participated in at least one pre-post measure. The number of children who were tested on a particular measure varied for a number of reasons. For example, in the first year of the project particularly, there was some difficulty in obtaining permission from the City Schools to administer a number of attitudinal measures to the children. In addition, some measures were only introduced during the second year and others were dropped.

Table 4

NUMBER OF SUBJECTS IN EACH EXPERIMENTAL GROUP WHO PARTICIPATED IN AT LEAST ONE PRE_POST MEASURE

SCHOOL YEAR 1966-67

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control	TOTAL
Elem.	N	13	9	9	7	38
Jr. Hi.	N	11	8	10	10	39
TOTAL	N	24	17	19	17	77

SCHOOL YEAR 1967-68

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control	TOTAL
Elem.	N	9	9	15	16	49
Jr. Hi.	N	11	11	9	9	40
TOTAL	N	20	20	24	25	89

SCHOOL YEAR 1968-69

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control	TOTAL
Elem.	N	10	10	18	16	54
Jr. Hi.	N	9	9	10	9	37
TOTAL	N	19	19	28	25	91

ALL THREE SCHOOL YEARS COMBINED

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control	TOTAL
Elem.	N	32	28	42	39	141
Jr. Hi.	N	31	28	29	28	116
TOTAL	N	63	56	71	67	257

The mean ages and I.Q's. of the participating subjects in each experimental group are presented in Tables 5 and 6. While the groups appear to be well matched for age, there are definite discrepancies in I.Q. I.Q's. of the Advantaged children are higher than those of the Disadvantaged boys. This difference was anticipated since a more liberal criterion was used in selecting disadvantaged children with at least "average" I.Q's. It was assumed that the I.Q. score available in the child's record, or on testing, might well be an underestimate and children with I.Q's. in the middle and high 80's were included if there was other data (e.g., teacher's report) indicating that the child was brighter than his I.Q. score indicated.

The basis for the differences in I.Q. among the Disadvantaged elementary children is less clear. These children were randomly assigned to the various experimental conditions and should have comparable I.Q. scores. The I.Q. of the Fernald Disadvantaged elementary group is reliably lower, however, than the mean I.Q. of the Control elementary group. One minor factor contributing to this difference is the somewhat greater mean I.Q. of the children in the Enrichment and Control groups who remained in the project as compared to the children who were not available for re-testing. As can be seen from Table 7, the elementary children who left the project tended to have lower I.Q's. However, inclusion of these children would still result in the Control elementary children having a reliably higher I.Q. than the group bussed to the Fernald School. Another possible source of bias lies in the initial selection. While the children were randomly assigned to each group and while the great majority of families agreed to send their child to the Fernald School, if the children of the three families at

Table 5

MEANS AND STANDARD DEVIATION OF AGE
OF EXPERIMENTAL GROUPS

MEAN AGE (in months)

	Adv.	Disadv.	Enrich.	Con.
Elem.	118.7	117.4	115.5	116.9
(N)	(32)	(28)	(42)	(39)
J.H.	159.9	158.9	157.6	158.1
(N)	(31)	(28)	(29)	(28)

STANDARD DEVIATIONS

	Adv.	Disadv.	Enrich.	Con.
Elem.	12.4	13.2	13.3	13.9
J.H.	11.9	7.0	8.2	7.9

Table 6

MEANS AND STANDARD DEVIATIONS OF I.Q. OF EXPERIMENTAL GROUPS

MEAN I.Q.

	Adv.	Disadv.	Enrich.	Con.
Elem.	98.2	91.5	94.3	96.5
(N)	(32)	(28)	(41)	(39)
J.H.	97.7	91.3	93.3	91.3
(N)	(31)	(27)	(28)	(26)

STANDARD DEVIATION

	Adv.	Disadv.	Enrich.	Con.
Elem.	8.6	8.7	10.7	9.7
J.H.	6.9	7.5	8.6	8.8

Table 7

Mean Ages, I.Q's and Pre-Test Grade Placement of School Enrichment and Control Subjects Who Left the Project Before Post Testing

A. Age

	School Enrichment	Control
Elementary	118.1	115.4
(N)	(7)	(10)
Junior High	166.5	159.7
(N)	(2)	(3)

B. I.Q.

	School Enrichment	Control
Elementary	92.0	94.1
(N)	(4)	(9)
Junior High	93.0	91.7
(N)	(1)	(3)

C. CAT Grade Placement

	School Enrichment	Control
Elementary	2.87	2.96
(N)	(8)	(10)
Junior High	6.10	5.77
(N)	(2)	(3)

the elementary level who did not agree had high I.Q.'s, then their replacement by even three lower I.Q. children could affect the mean differences. These initial I.Q. differences are reflected in a number of pre-test measures. Thus the initial C.A.T. mean Grade Placement scores of the Fernald Elementary Disadvantaged children was 2.71, the mean for the Controls was 3.32, while the mean for the Controls who left the project was 2.96. While pre-test differences were present at the elementary level, these did not materially influence the outcome of the study. Thus, there was practically no relationship between initial level and amount of change.* Secondly, comparable effects were observed at the junior high level and at the elementary levels (although stronger at the junior high level). Finally, special analyses were undertaken in which the effects of initial differences in pre-test scores on subsequent post-test scores were eliminated through statistical procedures (covariance) and these analyses yielded results which were very close to the comparisons of the amount of change displayed by each group.**

2. Achievement Test Changes

Our arguments concerning the limitations of our measuring procedures notwithstanding, the first question that is generally (and reasonably) raised is concerning the degree of movement in basic academic skills in the disadvantaged children and whether the movement in the two experimental groups is greater than in the Controls. This latter question can only be answered by the Academic Year phase of the project since there were no control groups employed in the two summer sessions in which disadvantaged children attended the Fernald School. The Summer School data will therefore be considered as supplementary to the academic year program which provided the basic structure for the research evaluation.

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*A rather surprising finding in view of statistical regression effects.

**These and the other statistical references are to 2-way (Condition by Age Group) analyses of variance and covariance done using Biomedical Computer Program BMD X64 "General Linear Hypothesis", written by Paul Sampson of the Health Sciences Computing Facility, UCLA. Specific comparisons among experimental groups were made as subanalyses within the overall analyses. For further information on these procedures, see Dixon, 1969; Kempthorne, 1961; and Scheffé, 1959.

a. Total Grade Placement

The California Achievement Test was administered at the beginning and at the end of each academic year to all experimental groups. This test consists of three components - Reading, Arithmetic, and Language Arts skills; each of which has two sub-scales. The child's scores on these six scales can be combined into a total score which is descriptive of the child's over-all grade-placement equivalent. The pre-test and change score means of these C.A.T. total Grade Placement scores are presented in Table 8. The differences among the pre-test means of the three disadvantaged groups warrant some analysis and discussion. At the elementary level, the Control group mean is about six months higher than the Fernald Disadvantaged group mean while the difference is reversed at the junior high school level.

Both of these differences are statistically reliable. Reference has been already made to the I.Q. differences between the Fernald Disadvantaged and Control groups at the elementary level, and the differences in initial Grade Placement Scores is probably a reflection of this I,Q. difference. The mean I.Q's. of the Fernald Disadvantaged and Controls are quite comparable at the junior high level, however, - with respective quotients of 91.30 and 91.27. These differences in initial Grade Placement Scores at the junior high level cannot be attributed to I.Q. differences.

Table 8

CAT Total Grade Placement

A. Pre-Test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	2.75	2.71	2.87	3.32
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	5.98	6.15	5.76	5.50
	n	(28)	(28)	(28)	(27)
Total	Means	4.26	4.43	4.08	4.25
	n	(60)	(56)	(67)	(63)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem	Means	1.08	1.06	0.68	0.75
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	1.04	1.10	0.57	0.52
	n	(28)	(28)	(28)	(27)
Total	Means	1.06	1.08	0.63	0.65
	n	(60)	(56)	(67)	(63)

C. Analysis of Variance

Source	SSQ	d.f.	MS	F	
Mean	175.33	1	175.33	528.11	
Condition	11.81	3	3.94	11.86	$p < .0005$
Age	0.43	1	0.43	1.30	
C x A	0.60	3	0.20	0.60	
Error	79.01	238	0.33		

The use of the I.Q. enables us to predict at a much better than chance level a child's response in different learning situations. At the same time, we know that children with the same I.Q. manifest markedly different learning patterns, and that the same child's performance will vary greatly in different learning circumstances. A child, seemingly dull and apathetic, may be moved to great effort and significant improvements in performance by a particular teacher or classroom atmosphere. Teachers operate on this assumption of variability when they change a child's seat, or, in collaboration with counselor and principal, move the child to another class. In our work with the disadvantaged children, we have been struck with their responsiveness to different school and class situations, and the variation in their behavior under these different conditions.

From the first day of testing of the disadvantaged group assigned to the Fernald School for the 1966-67 school year, it was apparent that the school setting would influence the behavior of the boys. The children tested at their home schools were restless, defensive, nonconforming and negativistic. The matched group of children tested at the Fernald School, particulary the junior high boys, were obliging, serious, and task oriented. These behavioral differences may well have influenced the Achievement Test performance.

While the pre-test differences are of interest and importance, the key data lie in the change score means presented in Table 8B and Figure 1. The movement of the two groups of children at the Fernald School is remarkably similar. At both the elementary and junior high level and for both advantaged and disadvantaged samples, the increase in grade placement is about a year and a month. In contrast, the

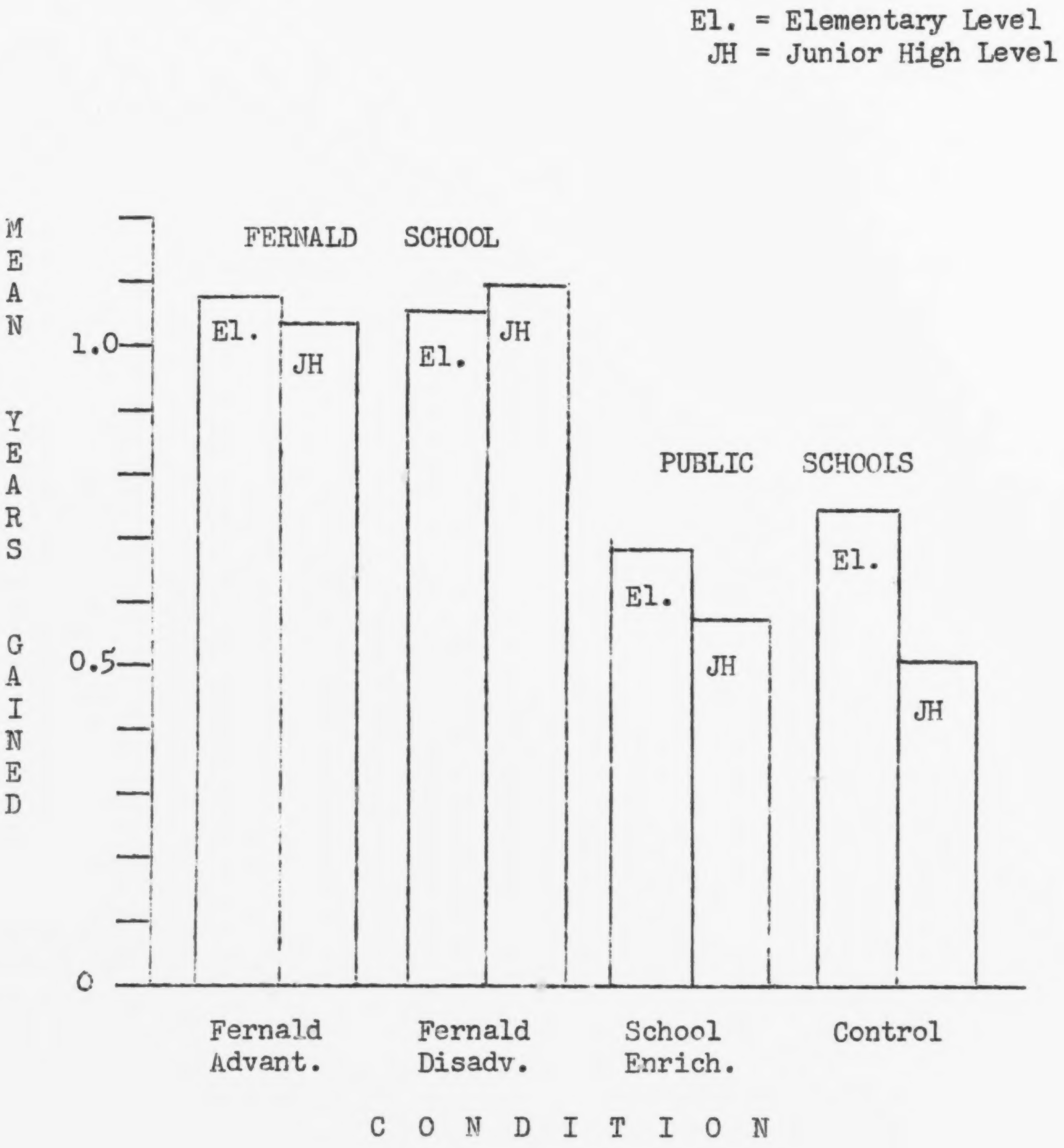

Figure 1

Mean Gain in Total Grade Placement on the California Achievement Test movement in the Enrichment and Control groups was significantly less. The increase in the Fernald Disadvantaged group is significantly greater than the corresponding increase in the Control and in the Enrichment groups at both the elementary and junior high levels. For the elementary groups, the mean change was 0.68 years for the School Enrichment sample and 0.75 years for the Control sample in comparison to 1.06 years for the Fernald Disadvantaged group. At the junior high level, the increase of 1.10 in the children bussed to the Fernald School is about twice the amount of change in the School Enrichment and Control groups.

These data then indicate the following:

-- The disadvantaged children bussed to the Fernald School and the advantaged children at the Fernald School made increases in grade-placement scores of slightly more than one year.

-- The disadvantaged children bussed to the Fernald School made significantly greater gains than either the Enrichment or Control groups.

-- The relative advantage of the Fernald Disadvantaged children over the other groups was most pronounced at the junior high level.

-- The Enrichment children did not make significantly greater gains than the Controls.

This pattern of findings holds for many of the sub-tests of the over-all Achievement Test scale. However, there are a number of interesting deviations from this general pattern which merit particular attention. These will be explored in the discussion of changes on each component of the CAT.

b. Changes in Reading Achievement

The pre-test and change score means for the Reading

Achievement totals can be found in Table 9. These data are generally comparable with the total grade-placement scores, with the differences between the Fernald and other disadvantaged groups being somewhat smaller. From the analysis of the Reading Vocabulary and Reading Comprehension scores presented in Tables 10 and 11, it appears that the differences in the disadvantaged groups in Reading Achievement are largely due to the greater gains made by the Fernald children in Reading Comprehension. In Reading Vocabulary, the differences at the elementary level were minimal. Although the Fernald Advantaged junior high boys gained an average of about a year on this measure, the Fernald Disadvantaged children made only a slightly greater gain than the half-year of movement in the Controls.

The children's teachers felt that the Fernald and Enrichment groups, respectively, did make substantial gains in Reading Vocabulary, but that these gains were not reflected in the CAT measure, which tends to sample middle class rather than lower class linguistic terms. This possible bias could be particularly acute in the present evaluation of vocabulary change in view of the individualized methods emphasized at the Fernald School. The approach at the school is to use, as one important source of new reading vocabulary, the concepts which the child employs in his speech and in his story-writing. This source of reading vocabulary in disadvantaged children is not very well sampled by reading achievement tests.

c. Changes in Arithmetic Achievement

The pre-test and change scores in the Arithmetic Achievement totals are presented in Table 12. The effect of the experimental treatment is again highly significant statistically, and is more pronounced at the junior high level, the differences among the disadvantaged groups at

Table 9

CAT Reading Total

A. Pre-Test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	2.68	2.44	2.63	3.10
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	5.96	6.13	5.56	5.39
	n	(29)	(28)	(28)	(27)
Total	Means	4.24	4.28	3.85	4.08
	n	(61)	(56)	(67)	(63)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	0.98	1.02	0.74	0.74
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	1.02	0.90	0.56	0.58
	n	(29)	(28)	(28)	(27)
Total	Means	1.00	0.96	0.67	0.67
	n	(61)	(56)	(67)	(63)

C. Analysis of Variance of Change Scores

Source	SSQ	d.f.	MS	F	
Mean	163.00	1	163.00	303.51	
Condition	6.47	3	2.16	4.02	p < .01
Age	0.67	1	0.67	1.24	
C x A	0.44	3	0.15	0.27	
Error	128.36	239	0.54		

Table 10

CAT Reading Vocabulary

A. Pre-Test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	2.76	2.56	2.64	3.05
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	5.88	6.16	5.52	5.45
	n	(29)	(28)	(28)	(27)
Total	Means	4.25	4.36	3.84	4.08
	n	(61)	(56)	(67)	(63)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	0.85	0.92	0.75	0.82
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	1.08	0.67	0.57	0.54
	n	(29)	(28)	(28)	(27)
Total	Means	0.96	0.80	0.67	0.70
	n	(61)	(56)	(67)	(63)

C. Analysis of Variance of Change Scores

Source	SSQ	d.f.	MS	F
Mean	146.22	1	146.22	197.04
Condition	3.50	3	1.17	1.57
Age	0.90	1	0.90	1.21
C x A	2.57	3	0.86	1.15
Error	177.36	239	0.74	

Table 11

CAT Reading Comprehension

A. Pre-Test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	2.47	2.21	2.55	3.12
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	5.99	6.15	5.57	5.30
	n	(29)	(28)	(28)	(27)
Total	Means	4.15	4.18	3.81	4.05
	n	(61)	(56)	(67)	(63)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	1.19	1.15	0.74	0.65
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	0.90	1.03	0.53	0.59
	n	(29)	(28)	(28)	(27)
Total	Means	1.06	1.09	0.65	0.63
	n	(61)	(56)	(67)	(63)

C. Analysis of Variance of Change Scores

Source	SSQ	d.f.	MS	F	
Mean	175.03	1	175.03	215.61	
Condition	11.81	3	3.94	4.85	$p < .005$
Age	1.73	1	1.73	2.13	
C x A	0.47	3	0.16	0.19	
Error	194.02	239	0.81		

Table 12

CAT Arithmetic Total

A. Pre-Test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	2.82	3.02	3.14	3.62
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	6.11	6.34	6.11	5.71
	n	(28)	(28)	(28)	(27)
Total	Means	4.36	4.68	4.38	4.52
	n	(60)	(56)	(67)	(63)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	1.12	1.05	0.74	0.74
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	1.07	1.07	0.49	0.40
	n	(28)	(28)	(28)	(27)
Total	Means	1.10	1.06	0.63	0.60
	n	(60)	(56)	(67)	(63)

C. Analysis of Variance of Change Scores

Source	SSQ	d.f.	MS	F	
Mean	168.99	1	168.99	416.21	
Condition	14.47	3	4.82	11.88	$p < .0005$
Age	1.46	1	1.46	3.60	
C x A	1.33	3	0.44	1.09	
Error	96.63	238	0.41		

the elementary level falling short of the .05 level of statistical significance. Some clarification of these findings is provided by Tables 13 and 14. There is very little difference at the elementary level between the Fernald Disadvantaged and the other two groups in changes on the Arithmetic Reasoning sub-test,* while the differences in Arithmetic Fundamentals are larger and are consistent with the over-all trend. At the junior high level, the gain in Arithmetic Fundamentals in the Enrichment and Control samples is negligible and is significantly smaller than that of the Fernald Disadvantaged who showed a year's increment. The change in Arithmetic Reasoning in the Fernald Disadvantaged junior high group is particularly impressive, the mean gain of 1.3 years being significantly greater than the gain of 0.9 years in the Advantaged group and 0.7 and 0.6 years in the Enrichment and Control groups, respectively. Since the skills entailed in Arithmetic Reasoning are at a higher order conceptual level than the more rote content of Arithmetic Fundamentals, the gain achieved by the Fernald Disadvantaged children acquires special significance.**

d. Changes in Spelling and English Mechanics

The Language sub-scale of the CAT consists of two tests, one assessing spelling skills and the other assessing various aspects of English Mechanics. The total Language scale scores presented in Table 15 reflect a pattern similar to that obtained on the other achievement measures. While the differences between the School Enrichment and Control groups are

*The smaller increment in the Enrichment children is not statistically reliable relative to the changes in the other two disadvantaged groups.

**It should also be noted that the Enrichment group was not given special instruction in the arithmetic area.

Table 13

CAT Arithmetic Reasoning

A. Pre-Test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	2.94	2.81	2.97	3.20
	(n)	(32)	(28)	(39)	(36)
Jr. Hi.	Means	6.11	6.25	5.93	5.51
	n	(28)	(28)	(28)	(27)
Total	Means	4.42	4.53	4.20	4.19
	n	(60)	(56)	(67)	(63)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	0.95	1.04	0.70	0.91
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	0.90	1.29	0.70	0.57
	n	(28)	(28)	(28)	(27)
Total	Means	0.92	1.16	0.70	0.77
	n	(60)	(56)	(67)	(63)

C. Analysis of Variance of Change Scores

Source	SSQ	d.f.	MS	F	
Mean	188.19	1	188.19	366.38	
Condition	7.89	3	2.63	5.12	$p < .005$
Age	0.07	1	0.07	0.14	
C x A	2.72	3	0.91	1.77	
Error	122.24	238	0.51		

Table 14

CAT Arithmetic Fundamentals

A. Pre-Test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	2.77	3.12	3.28	3.86
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	5.97	6.28	6.11	5.78
	n	(28)	(28)	(28)	(27)
Total	Means	4.26	4.70	4.46	4.68
	n	(60)	(56)	(67)	(63)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	1.24	1.02	0.78	0.61
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	1.22	1.03	0.37	0.24
	n	(28)	(28)	(28)	(27)
Total	Means	1.23	1.02	0.61	0.46
	n	(60)	(56)	(67)	(63)

C. Analysis of Variance of Change Scores

Source	SSQ	d.f.	MS	F	
Mean	160.11	1	160.11	261.99	
Condition	25.53	3	8.51	13.92	$p < .0005$
Age	2.32	1	2.32	3.80	
C x A	2.24	3	0.75	1.22	
Error	145.45	238	0.61		

Table 15

CAT Language Total

A. Pre-Test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	2.81	2.53	2.65	3.04
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	5.96	6.04	5.51	5.36
	n	(28)	(28)	(28)	(27)
Total	Means	4.28	4.28	3.85	4.04
	n	(60)	(56)	(67)	(63)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	0.94	1.15	0.87	0.77
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	0.98	1.20	0.54	0.53
	n	(28)	(28)	(28)	(27)
Total	Means	0.96	1.18	0.73	0.67
	n	(60)	(56)	(67)	(63)

C. Analysis of Variance of Change Scores

Source	SSQ	d.f.	MS	F	
Mean	184.55	1	184.55	384.76	
Condition	10.51	3	3.50	7.30	$p < .0005$
Age	0.86	1	0.86	1.80	
C x A	1.71	3	0.57	1.19	
Error	114.15	238	0.48		

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slight, the Disadvantaged children at the Fernald School attain the highest score of all the groups, significantly different from the Enrichment groups and from the Controls, although not from the Advantaged children. Again, the differences at the junior high level are larger than those at the elementary level. For the younger children, the difference between the Fernald Disadvantaged and the Controls is statistically reliable, but that between the Fernald boys and the Enrichment group fails to achieve statistical significance. From Table 16, it can be seen that, while the Control group made the least gain in spelling, the increments in the other groups are not much larger. None of the differences in this table are statistically reliable; they contribute in only a minor way to the differences obtained on the total Language measure. The main source of these differences is the large increment obtained by the Fernald Disadvantaged children on the English Mechanics sub-test, as shown in Table 17. At the elementary level, the Fernald Disadvantaged increase a little more than 1.1 years and, at the junior high level, they make a gain of 1.4 years in English Mechanics. The latter gain is significantly greater than that achieved by either the Enrichment or Control groups. At the elementary level, these differences only attain the .10 level of significance.

These statistics provide only a bare indication of the substantial improvements made by many of the Fernald children in their language skills. They particularly fail to reflect the gains made by a number of the elementary level boys. To illustrate some of these changes, selections from the story-writing of five 1968-1969 Fernald Disadvantaged boys - four elementary and one junior high - are presented in Appendix 6. For each child, a story written at the beginning of the school year is paired with a story written during the latter part of their stay at Fernald.

Table 16

CAT Spelling

A. Pre-Test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	2.16	2.11	2.22	2.63
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	4.87	5.61	4.83	4.83
	n	(28)	(28)	(28)	(27)
Total	Means	3.42	3.86	3.31	3.57
	n	(60)	(56)	(67)	(63)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	1.10	1.16	1.18	0.82
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	0.84	0.74	0.55	0.53
	n	(28)	(28)	(28)	(27)
Total	Means	0.98	0.95	0.92	0.70
	n	(60)	(56)	(67)	(63)

C. Analysis of Variance of Change Scores

Source	SSQ	d.f.	MS	F	
Mean	181.04	1	181.04	198.62	
Condition	3.19	3	1.06	1.17	
Age	9.64	1	9.64	10.58	$p < .005$
C x A	1.32	3	0.44	0.48	
Error	216.94	238	0.91		

Table 17

CAT Mechanics of English

A. Pre-Test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	2.97	2.62	2.76	3.16
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	6.30	6.16	5.68	5.51
	n	(28)	(28)	(28)	(27)
Total	Means	4.52	4.39	3.98	4.16
	n	(60)	(56)	(67)	(63)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	0.93	1.15	0.79	0.75
	n	(32)	(28)	(39)	(36)
Jr. Hi.	Means	1.09	1.40	0.55	0.57
	n	(28)	(28)	(28)	(27)
Total	Means	1.00	1.27	0.69	0.67
	n	(60)	(56)	(67)	(63)

C. Analysis of Variance of Change Scores

Source	SSQ	d.f.	MS	F	
Mean	197.38	1	197.38	308.84	
Condition	15.40	3	5.13	8.03	$p < .0005$
Age	0.00	1	0.00	0.00	
C x A	2.72	3	0.91	1.42	
Error	152.11	238	0.64		

The changes in the stories speak for themselves. For the first four boys, all of whom are at the elementary level, the striking increments in productivity as well as story quality are noteworthy. The last child, a junior high school boy, already enjoyed writing when he entered the school. His compositions, however, underwent a radical change - from employing simple vocabulary in a somewhat repetitive manner to the use of more complex, better organized ideas. The process through which this change and the changes in the other children occurred is not readily discernable from these data. To venture an interpretation at this point, it is our conjecture that these changes do not particularly arise from instruction in specific content or the acquisition of specific skills, but rather result from a more open learning environment in which the child is willing to "risk" ventures into more complex expressions, albeit at the cost of mis-spellings and grammatical errors.

e. Distribution of Changes on Achievement Tests

Another way of examining the different increments made by each group is to compare the relative frequencies of subjects who made minimal, slight, moderate, and substantial gains in Total Achievement Test scores. These data are tabulated in Table 18. There are clear differences between the Fernald groups and the Enrichment and Control groups which can be described in a number of ways. Thus, at the elementary level, six out of 28, or 22%, of the Fernald Disadvantaged boys made gains of 1.5 or more years, in comparison to approximately 14% of the Enrichment and Control groups. If we compare the proportion who made a gain of at least one year, the differences are more striking and also more reliable. 54% of the Fernald Disadvantaged boys, in contrast to 33% of the Enrichment group and

Table 18

DISTRIBUTION OF TOTAL GRADE PLACEMENT SHIFTS

Elementary

	Fernald Adv.	Fernald Disadv.	Enrichment	Control
+ 1.5 and up	8 (25%)	6 (21%)	5 (13%)	5 (14%)
1.0 to 1.4	11 (34%)	9 (32%)	8 (21%)	3 (8%)
0.5 to 0.9	8 (25%)	11 (39%)	15 (38%)	17 (47%)
0.0 to 0.4	3 (9%)	2 (7%)	7 (18%)	11 (31%)
- shifts (Losses)	2 (6%)	0 --	4 (10%)	0 --
Total	32	28	39	36

Junior High

	Fernald Adv.	Fernald Disadv.	Enrichment	Control
+ 1.5 and up	8 (29%)	6 (18%)	2 (7%)	1 (4%)
1.0 to 1.4	8 (29%)	12 (43%)	1 (3%)	4 (15%)
0.5 to 0.9	6 (21%)	8 (29%)	14 (50%)	8 (30%)
0.0 to 0.4	5 (18%)	2 (7%)	10 (36%)	12 (44%)
- shifts (Losses)	1 (3%)	0 --	1 (3%)	2 (7%)
Total	28	28	28	27

22% of the Controls, increased their total Grade Placement score by at least one year.

The shifts at the junior high level are comparable. Only one of the Control boys and two of the Enrichment boys, in comparison to six of the Fernald Disadvantaged and eight of the Fernald Advantaged, made increments of 1.5 years. When increases of at least one year are used as the cut-off point, the respective percentages above that point are 57% of the Fernald Advantaged, 64% of the Fernald Disadvantaged, and only 11%of the Enrichment and 27% of the Controls.

These data serve to reinforce the analysis based upon the mean differences among the experimental groups. The pattern of shifts for each of the individual sub-tests is comparable to the mean differences; it reflects the greater increments in the Fernald Disadvantaged as compared to the Controls and the Enrichment groups, especially at the junior high school level, and the minimal differences between the Enrichment and Control groups. The findings indicating that junior high school level children can derive substantial benefits from a compensatory program merits special attention in view of the widely held opinions that compensatory remedial educational efforts are relatively ineffective for this population and are best expended at earlier ages.

f. Achievement Pattern of the Four Children Remaining a Second Year

It may be recalled that four of the Fernald Disadvantaged children, two elementary and two junior high, were kept a second year. This deviation from the experimental design did not affect the over-all results in any important way (significant effects are still obtained when these children are dropped from the analysis) and provided the opportunity to examine the influence of a second year's individualized teaching program upon a small number of disadvantaged children. Interpretation of the second year performance of this group is complicated by the fact that they were given more achievement tests than the other children and it is difficult to evaluate the effects of repeated testing. The achievement test results for each of the two years for these four youngsters are presented in Table 19. The Grade Placement scores obtained at the end of the first year and at the beginning of the second year are fairly comparable, two of the latter being higher and two being lower than the previous spring's testing, suggesting the absence of a test-taking factor at this point. One must be particularly careful in drawing any inference from small changes inasmuch as these could readily be a function of the degree of reliability of the measuring instrument. The over-all Grade Placement findings are nevertheless suggestive.

The two elementary children made minimal gains their first year - 0.4 a and 0.5 years respectively - but made significant gains during the second year - 2.0 and 1.2 years respectively. The gains of the junior high boys were comparable for the first and second years - 1.1 to 1.2 years and 1.4 to 1.5 years. The second year increment for the last child, L. T., is somewhat exaggerated by the fact that he obtained a much lower score on his initial second year test than on the previous testing. Thus his gain over the two-year period is only 2.2 years rather than 2.9 years. At the same time, in those areas in which he was significantly retarded - namely reading and spelling - he demonstrated substantial improvements over the two-year period. His over-all gain in reading was 2.9 years and in spelling, 3.2 years. In

Table 19

CALIFORNIA ACHIEVEMENT TEST SCORES OF DISADVANTAGED STUDENTS AT FERNALD SCHOOL FOR TWO YEARS

CALIFORNIA ACHIEVEMENT TEST

	RV	RC	RT	AR	AF	AT	ME	SP	LT	TGP	
K.P. Elementary											
Fall,67	3.1	3.8	3.5	4.1	4.7	4.3	3.8	2.9	3.7	3.9	1st year
Spring,68	3.8	4.4	4.2	4.2	4.8	4.6	4.0	3.9	4.0	4.3	
Change	0.7	0.6	0.7	0.1	0.1	0.3	0.2	1.0	0.3	0.4	
Fall,68	3.7	4.0	4.4	3.8	4.7	4.3	4.0	2.4	3.9	4.1	2nd year
Spring,69	6.0	5.8	5.9	6.9	5.5	6.1	6.5	5.2	6.2	6.1	
Change	2.3	1.8	1.5	3.1	0.8	1.8	2.5	2.8	2.3	2.0	
T.C. Elementary											
Fall,67	3.7	3.0	3.3	3.4	4.1	3.8	3.0	2.2	2.8	3.5	1st year
Spring,68	3.6	3.3	3.4	4.2	4.8	4.6	3.8	3.1	3.7	4.0	
Change	-0.1	0.3	0.1	0.8	0.7	0.8	0.8	0.9	0.9	0.5	
Fall,68	4.3	3.2	3.7	5.1	4.4	4.9	4.3	3.8	4.3	4.3	2nd year
Spring,69	5.5	5.3	5.4	6.2	5.9	6.1	5.3	3.1	4.8	5.5	
Change	1.2	2.1	1.7	1.1	1.5	1.2	1.0	-0.7	0.5	1.2	
A.W. Junior High											
Fall,67	4.5	3.9	4.2	4.7	5.6	5.3	3.6	2.0	3.2	4.3	1st year
Spring,68	3.5	5.3	4.5	5.3	6.8	6.4	5.7	3.8	5.4	5.4	
Change	-1.0	1.4	0.3	0.6	1.2	1.1	2.1	1.8	2.2	1.1	
Fall,68	4.9	5.8	5.4	5.6	6.8	6.4	5.3	4.6	5.1	5.7	2nd year
Spring,69	3.6	6.6	5.2	8.1	7.8	8.0	7.5	5.1	6.9	6.9	
Change	-1.3	0.8	-0.2	2.5	1.0	1.6	2.2	0.5	1.8	1.2	
L.T. Junior High											
Fall,67	6.4	5.8	6.0	8.3	7.4	7.7	7.4	4.1	6.6	6.9	1st year
Spring,68	6.6	7.5	7.1	9.0	8.3	8.7	9.9	6.4	8.6	8.3	
Change	0.2	1.7	1.1	0.7	0.9	1.0	2.5	2.3	2.0	1.4	
Fall,68	6.1	7.7	7.1	7.8	7.3	7.4	8.5	7.3	8.1	7.6	2nd year
Spring,69	7.8	9.7	8.9	9.8	9.1	9.4	8.9	7.3	8.4	9.1	
Change	1.7	2.0	1.8	2.0	1.8	2.0	0.4	0.0	0.3	1.5	

regard to the other junior high school child, A. W., his teacher noted at the time of testing that he was initially very upset and "blew" the reading portion of the C.A.T.

One can, of course, exaggerate the importance of these individual variations. The test results of the other children are also influenced by variations in mood and special stresses. Hence the need for control groups in evaluating these changes. What one can reasonably infer from these data is that a certain number of children may require more than one year of a remedial program before demonstrating significant gains, and that it would be desirable to carry out a study in which the effects of an intensive, individualized remedial program, implemented over a two to three year period, were evaluated.

3. Other Cognitive Changes

a. Changes in Subtests of the WISC

Three sub-tests of the Wechsler Intelligence Scale for Children were administered at the beginning and end of the academic year during the second and third years of the project. The number of boys in each experimental group used in the analysis of these data will therefore be fewer than the numbers available for the Achievement comparisons, and reliable results more difficult to obtain.

The pre-test and change means for the Comprehension sub-test are presented in Table 20. While the differences in pre-test means are not statistically reliable, the higher initial score of the Control elementary group is consistent with the higher initial scores attained on the Achievement measures. The change scores on this sub-test are quite variable and none of the differences are statistically significant. As an incidental note,

Table 20

WISC Comprehension Subtest

A. Pre-test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	7.89	8.42	8.81	9.84
	n	(19)	(19)	(32)	(32)
Jr. High	Mean	9.22	8.06	8.78	7.94
	n	(18)	(18)	(18)	(18)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	1.42	1.26	0.53	0.41
	n	(19)	(19)	(32)	(32)
Jr. High	Mean	-0.17	1.11	0.67	1.56
	n	(18)	(18)	(18)	(18)

the fact that the elementary and junior high groups have comparable scores should not be interpreted to mean that their absolute performance was the same. The numbers in the pre-test table are weighted scores which are based on the age of the child as well as his performance. They essentially represent percentile scores. The 50th percentile is represented by a mean or weighted score of 10.*

The WISC Vocabulary pre- means and change score means are presented in Table 21. The Vocabulary scores on the pre-test of the Advantaged children are significantly higher than those of the Disadvantaged groups, while the differences among the latter are not statistically reliable. The superiority of the Advantaged children on the Vocabulary sub-scale of the WISC is consistent with the results of other studies comparing the linguistic repertoire of advantaged and disadvantaged youngsters. The special feature of these data is the nature of the advantaged and the disadvantaged samples - both drawn from learning disorder populations and equated for severity of learning disability.

The change scores are more directly relevant to the purposes of the study. Although there appear to be some sizeable differences in amount of vocabulary change, the vocabulary fluctuations are very variable and none of these differences are significant. The comment made concerning the limitations of the Reading Vocabulary measure also apply here. The possible cultural bias of the Vocabulary scale may make it relatively insensitive to vocabulary increments in disadvantaged populations.

*A weighted score of ten of each of five sub-tests would be equivalent to an I.Q. of 100. The standard deviation of each weighted scale is three; an average of 7 on five scales, yielding a total score of 35, is equal to an I.Q. of 94, while an average of 8 would be equivalent to an I.Q. of 96.

Table 21

WISC Vocabulary Subtest

A. Pre-test Means

		Fernald Adv. +	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	10.67	8.74	9.47	9.53
	n	(18)	(19)	(32)	(32)
Jr. High	Mean	9.95	8.11	8.94	8.28
	n	(19)	(19)	(18)	(18)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	0.22	0.84	1.16	1.31
	n	(18)	(19)	(32)	(32)
Jr. High	Mean	1.05	0.37	0.00	0.78
	n	(19)	(19)	(18)	(18)

No such limitation applies to the Arithmetic sub-scale of the WISC. However, as Table 22 indicates, there are pre-test differences on this measure which could have an influence on the change scores. These differences occur largely at the elementary level, the pre-test mean of the Fernald Disadvantaged children being significantly lower than that of either of the other disadvantaged groups. This pre-test difference is, in part, a consequence of the fact that some of the duller students left the Enrichment and Control samples during the course of the study, thereby elevating the mean score of the remaining children. Regardless of these initial differences, at both the junior high and elementary levels, the Fernald Disadvantaged boys show a significant increase in arithmetic performance which is reliably greater than that achieved by the other disadvantaged groups. Also, the increment is significantly greater than the change in the Advantaged elementary boys. The gains manifested by the Fernald Disadvantaged groups on this Arithmetic sub-scale can be viewed as an increment in I.Q. The obvious connection between these changes and the increments found on the arithmetic Achievement sub-tests points to the more general relationship between "I.Q." and "Achievement", and the often arbitrary distinction made between these two concepts.

b. Changes in Perceptual-Cognitive Functions

The Wepman Auditory Discrimination Test and the Bender-Gestalt measure of perceptual-motor functioning were administered to the elementary-age children* at the beginning and at the end of the academic year in order to determine whether changes in conceptual, academic skills

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*These measures are not appropriate to older age groups except where one suspects brain damage or some related nervous system malfunctioning.

Table 22

WISC Arithmetic Subtest

A. Pre-test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	8.63	7.58	9.34	8.94
	n	(19)	(19)	(32)	(32)
Jr. High	Mean	7.47	8.00	8.83	8.00
	n	(19)	(19)	(18)	(18)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	-0.11	2.00	0.00	0.59
	n	(19)	(19)	(32)	(32)
Jr. High	Mean	0.63	1.32	-0.28	-0.39
	n	(19)	(19)	(18)	(18)

were accompanied by systematic changes at the perceptual level.

The means of the pre-test and change error scores for the Wepman are presented in Table 23. The mean error score for the advantaged children is significantly lower than the mean error score obtained by each of the Disadvantaged groups. All of the Disadvantaged groups declined in error scores; this change, however, is not significantly differently from the zero mean change score of the Advantaged group. The pre-test difference may well reflect a vocabulary difference rather than one of auditory capacity or "tuning out" inasmuch as familiarity with the words used in the Wepman would influence the error score. The Bender-Gestalt data, presented in Table 24, are minimally influenced by any verbal component. The child simply has to copy a figure, verbalizations only entering into the instructions for this test. The child's productions were scored by the Koppitz method, higher scores reflecting more errors. Although none of the pre-test differences are significant, the differences are in the same direction as obtained on the Wepman.* If the three disadvantaged groups are combined and then compared to the Advantaged children, the difference is statistically reliable. As in the case of the Wepman, there are no significant differences in change scores.

These data, then, indicate that the experimental program had no significant effect upon these perceptual-cognitive skills which have been linked to learning problems, particularly in reading. While one cannot conclude from these data alone that changes on the perceptual-cognitive level were irrelevant to changes in academic skills, this inference is certainly a reasonable one. The poorer performance of the Disadvantaged as compared

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*A similar result was obtained on the Marianne Frostig Developmental Test of Visual Perception.

Table 23

Wepman Auditory Discrimination Test Means
(Elementary Students Only)

A. Pre-test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	1.89	3.47	3.83	3.54
	n	(19)	(19)	(29)	(28)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Means	0.0	-0.79	-1.34	-0.61
	n	(19)	(19)	(29)	(28)

Table 24

Bender Visual-Motor Gestalt Test Means
(Elementary Students Only)

A. Pre-test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem	Means	3.11	4.37	4.42	4.57
	n	(18)	(19)	(31)	(28)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
	Means	-0.61	-0.84	-0.77	-1.07
Elem	n	(18)	(19)	(31)	(28)

to the Advantaged children requires additional analysis and supplementation by other data before it can be adequately interpreted.

4. Changes in Motivation and Attitude Measures

a. Test Anxiety Scale for Children

The Test Anxiety Scale for Children (TASC), devised by Sarason and his associates, was administered as a pre- and post-test in order to determine whether participation in the Fernald School and Enrichment programs resulted in a significant decrement in anxiety over tests, school performance, classroom activity and related matters. The pertinent pre-test and change means on this scale are presented in Table 25. The pre-test measure shows the younger children to be slightly less anxious than the older children and the Advantaged children to be markedly less anxious than the Disadvantaged boys. Within the disadvantaged sample, the mean of the Enrichment elementary group is elevated while, at the junior high level, the mean is lower than that of the other disadvantaged groups. Since the Enrichment and Control children were tested at the same time, it is difficult to account for the initial differences between them. Perhaps, on being informed of the Enrichment program, the younger children became more anxious while the older boys assigned to the Enrichment group felt some relief and reassurance.

The change scores in Table 25-B show all groups decreasing in Anxiety scores on re-testing, the Fernald Disadvantaged subjects manifesting the largest decrement - although not significantly different from that of the other groups. If one takes into account the initial differences between the Fernald Disadvantaged group and the Control, the difference does become

Table 25

Test Anxiety Scale for Children
-- All Scores --

A. Pre-test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	5.33	9.54	12.89	9.31
	n	(32)	(26)	(38)	(36)
Jr. High	Mean	7.83	12.30	11.36	15.21
	n	(27)	(27)	(28)	(24)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	-0.63	-3.54	-1.21	-1.33
	n	(32)	(26)	(38)	(36)
Jr. High	Mean	-2.06	-3.15	-0.61	-2.83
	n	(27)	(27)	(28)	(24)

significant at the .05 level.* However, the test protocols submitted by several of the children suggest that these data must be interpreted with great caution since a few boys apparently did not fill out the questionnaire in a conscientious manner. We may assume these to be boys who received the maximum possible score or who received zero scores. When these boys are eliminated from the analysis, the differences between groups, as Table 26 indicates, become smaller and, with respect to pre-post changes, statistically insignificant.

b. Changes in Vocational Aspirations

The measure of Vocational Aspirations was administered as one means of determining whether the Fernald and Enrichment experiences produced any changes in the child's perception of the opportunities available to him and the level of vocational goals he sets for himself. The relevant data are presented in Table 27. In this instance, the lower the score, the higher the income and social status of the occupation to which the child aspires. The pre-test differences are more interesting on this measure than the change scores. The Advantaged children, as might be expected, tend to have higher aspirations than the Disadvantaged boys. However, the differences are not large, reflecting perhaps the fact that the Advantaged children perceive themselves as having learning problems which limit their vocational possibilities. The finding that the junior high level children have more ambitious vocational aspirations than their elementary counterparts is encouraging. Despite their history of learning difficulties, the junior high boys have not become overwhelmed and completely discouraged by their failures.

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*Analysis of Covariance on post-test scores, using pre-test scores as a covariate.

Table 26

Test Anxiety Scale for Children
- Scores above Zero and Below Maximum[*] -

A. Pre-test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	9.50	11.71	12.92	9.57
	n	(16)	(17)	(37)	(35)
Jr. High	Mean	8.44	13.79	11.22	15.21
	n	(25)	(24)	(27)	(24)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	-1.50	-3.65	-0.92	-1.54
	n	(16)	(17)	(37)	(35)
Jr. High	Mean	-1.56	-3.71	-0.41	-2.83
	n	(25)	(24)	(27)	(24)

[*] Maximum score = 30

Table 27

Vocational Aspirations-- Sum of Status Ranks of Jobs Chosen*

A. Pre-test Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	34.03	41.08	37.58	37.28
	n	(30)	(25)	(38)	(36)
Jr. High	Mean	31.59	29.88	33.37	33.00
	n	(27)	(26)	(27)	(20)

B. Change Score Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	0.77	-3.44	-2.61	-2.94
	n	(30)	(25)	(38)	(36)
Jr. High	Mean	1.00	1.31	1.37	2.20
	n	(27)	(26)	(27)	(20)

* Low score means high rank, high aspiration.

The high score (low aspiration level) obtained by the Fernald Disadvantaged elementary children may reflect a contrast effect on initial testing which took place at the Fernald School along with the testing of the Advantaged children. The junior high level Fernald Disadvantaged students indicated a higher aspiration level than the other disadvantaged students and may have responded with hope and optimism to the educational opportunity which being bussed to the Fernald School signified for them. This explanation is admittedly post-hoc and is only offered as a tentative suggestion. More data is clearly needed to establish the stability of these initial differences and to determine the basis for them.

The change scores revealed very few reliable differences. The vocational measure reflected a lowered level of aspiration for all of the junior high groups on re-testing (more so in the Controls, but the difference between Controls and the other groups is not reliable). The experimental program, then, was not effective in raising the aspirations of the Fernald junior high boys, despite the gains they made in academic skills. Perhaps the boys were only being more realistic on re-testing. At the elementary level, the Fernald Disadvantaged children show an elevation in aspiration (a drop in mean score) reliably greater than the change in the Advantaged subjects, but not large enough to bring them in line with the other groups.

c. Changes in Perception of Different Ethnic Groups

One of the questions that was of central interest to us concerned the effects of the integration experience upon the child's perceptions of his own ethnic group and upon his perception of other ethnic groups. However, policies of the City schools prevented direct assessment of such perceptions and attitudes in the public school Enrichment and Control samples. Consequently we used a rather indirect procedure which entailed the presentation of photographs of Anglo (Caucasian), Black and Mexican-American children and the judgement of characteristics of the children in these photographs. The procedure used was a modification of one developed at Riverside, California, in connection with their integration project. An earlier effort, employing a semantic differential technique, proved to be tedious and relatively insensitive. While the "photograph" procedure was also used in the first year, the analysis is based upon only the last two years because modifications in administration and scoring were introduced after the first year.

The children's choices were scored such that the picture ranked highest on a particular trait was given a score of five, the next ranked a score of four, and so on down to zero. The scores for the two photographs representing a particular ethnic group were then summed, and this sum was used to reflect the ranking for each of the ethnic groups represented -- Anglos, Blacks, and Mexican-Americans.* The initial, or pre-test, rankings, presented in Tables 28 through 32, tell us something about the stereotyped conceptions which are held of each ethnic group and whether the Advantaged and Disadvantaged children share these stereotyped perceptions.

In Table 28 can be found the pre-test means and standard deviations for the judgements of "Kindest Boy". Both the Advantaged and Disadvantaged groups give much higher rankings on kindness to the Anglo stimulus photographs, particularly at the junior high level. Thus, the Advantaged

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*This analysis is based only on the photographs of the boys. The photographs of the girls were included for another purpose, and the data based on these stimuli is not presented here.

Table 28

Mean Pre-test Rank on Ethnic Attitudes
Instrument Question "Kindest Boy"
(as a function of ethnic background of child in photograph)

A. Photos of Anglo Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	5.89	6.37	5.41	5.37	5.69
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	7.11	7.44	7.50	6.71	7.21
(n)	(18)	(16)	(18)	(14)	(66)
Total	6.50	6.91	6.35	5.83	6.36
(n)	(36)	(32)	(40)	(41)	(149)

B. Photos of Negro Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	4.94	4.06	4.59	4.48	4.53
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	3.83	3.75	4.06	4.14	3.94
(n)	(18)	(16)	(18)	(14)	(66)
Total	4.39	3.91	4.35	4.37	4.27
(n)	(36)	(32)	(40)	(41)	(149)

C. Photos of Mexican-American Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	4.17	4.56	5.00	5.15	4.78
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	4.06	3.81	3.44	4.14	3.85
(n)	(18)	(16)	(18)	(14)	(66)
Total	4.11	4.19	4.30	4.80	4.37
(n)	(36)	(32)	(40)	(41)	(149)

Table 29

Mean Pre-Test Rank on Ethnic Attitudes Instrument Question "Happiest Boy" (as a function of ethnic background of child in photograph)

A. Photos of Anglo Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	6.28	6.56	5.68	6.26	6.17
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	7.00	6.62	6.56	6.36	6.65
(n)	(18)	(16)	(18)	(14)	(66)
Total	6.64	6.59	6.07	6.29	6.38
(n)	(36)	(32)	(40)	(41)	(149)

B. Photos of Negro Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	4.44	4.50	4.86	4.33	4.53
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	4.06	4.81	5.22	4.43	4.64
(n)	(18)	(16)	(18)	(14)	(66)
Total	4.25	4.66	5.02	4.37	4.58
(n)	(36)	(32)	(40)	(41)	(149)

C. Photos of Mexican-American Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	4.28	3.94	4.45	4.41	4.30
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	3.94	3.56	3.22	4.21	3.71
(n)	(18)	(16)	(18)	(14)	(66)
Total	4.11	3.75	3.90	4.34	4.04
(n)	(36)	(32)	(40)	(41)	(149)

Table 30

Mean Pre-Test Rank on Ethnic Attitudes Instrument Question "Best Grades"

(as a function of ethnic background of child in photograph)

A. Photos of Anglo Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	5.33	6.37	5.59	5.37	5.61
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	7.22	7.06	7.06	6.71	7.03
(n)	(18)	(16)	(18)	(14)	(66)
Total	6.28	6.72	6.25	5.83	6.24
(n)	(36)	(32)	(40)	(41)	(149)

B. Photos of Negro Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	4.83	4.00	4.00	4.22	4.25
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	3.89	3.69	3.83	4.29	3.91
(n)	(18)	(16)	(18)	(14)	(66)
Total	4.36	3.84	3.92	4.24	4.10
(n)	(36)	(32)	(40)	(41)	(149)

C. Photos of Mexican-American Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	4.83	4.62	5.41	5.41	5.13
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	3.89	4.25	4.11	4.00	4.06
(n)	(18)	(16)	(18)	(14)	(66)
Total	4.36	4.44	4.82	4.93	4.66
(n)	(36)	(32)	(40)	(41)	(149)

Table 31

Mean Pre-Test Rank on Ethnic Attitudes Instrument Question "Strongest Boy"

(as a function of ethnic background of child in photograph)

A. Photos of Anglo Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	2.00	2.87	3.73	2.74	2.87
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	3.18	3.31	2.67	2.14	2.85
(n)	(17)	(16)	(18)	(14)	(65)
Total	2.57	3.09	3.25	2.54	2.86
(n)	(35)	(32)	(40)	(41)	(148)

B. Photos of Negro Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	5.50	5.44	5.59	5.52	5.52
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	4.94	5.69	5.50	6.07	5.52
(n)	(17)	(16)	(18)	(14)	(65)
Total	5.23	5.56	5.55	5.71	5.52
(n)	(35)	(32)	(40)	(41)	(148)

C. Photos of Mexican-American Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	7.50	6.69	5.68	6.74	6.61
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	6.88	6.00	6.83	6.79	6.63
(n)	(17)	(16)	(18)	(14)	(65)
Total	7.20	6.34	6.20	6.76	6.62
(n)	(35)	(32)	(40)	(41)	(148)

Table 32

Mean Pre-Test Rank on Ethnic Attitudes
Instrument Question "Fastest Boy"
(as a function of ethnic background of child in photograph)

A. Photos of Anglo Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	3.39	4.81	3.86	3.52	3.83
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	4.78	5.00	4.61	4.50	4.73
(n)	(18)	(16)	(18)	(14)	(66)
Total	4.08	4.91	4.20	3.85	4.23
(n)	(36)	(32)	(40)	(41)	(149)

B. Photos of Negro Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	5.61	4.94	5.32	5.78	5.46
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	4.44	5.56	5.22	5.79	5.21
(n)	(18)	(16)	(18)	(14)	(66)
Total	5.03	5.25	5.27	5.78	5.35
(n)	(36)	(32)	(40)	(41)	(149)

C. Photos of Mexican-American Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	6.00	5.25	5.82	5.70	5.71
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	5.78	4.44	5.17	4.71	5.06
(n)	(18)	(16)	(18)	(14)	(66)
Total	5.89	4.84	5.52	5.37	5.42
(n)	(36)	(32)	(40)	(41)	(149)

group, which consists primarily of Anglos, and the Disadvantaged group, which, in this analysis*, consists primarily of Blacks, perceive Anglo boys as depicted in the photographs to be the kindest and they give the Negro stimuli the lowest ranking on this trait. The Anglo photographs are also ranked much higher by both Advantaged and Disadvantaged for "Happiest Boy" (Table 29) and boy who gets "Best Grades" (Table 30). On the dimension of "Best Grades", the junior high age group give considerably higher rankings to the Anglo stimuli than do the elementary boys, whether Advantaged or Disadvantaged.

It is only on the traits denoting physical skills that the Anglo stimulus boys are given lower ranks than the Negro and Mexican-American stimuli. The Mexican-Americans are judged as the strongest (Table 31), especially by the Advantaged boys, with the Negro stimuli falling close behind. The Anglo boys are clearly seen by both the Advantaged and Disadvantaged boys as much less strong than either Mexican-Americans or Blacks. The judgements of "Fastest Boy" (Table 32) are much the same, with Blacks and Mexican-Americans receiving similar ranks, and the Anglo boys seen as less fast than the others, especially by the elementary groups.

What is particularly striking about these data is the extent to which the Anglo Advantaged children and the largely Black Disadvantaged children share a common conception of the relative attributes of Anglos, Blacks, and Mexican-Americans. Both the child from the upper-middle income areas of Los Angeles and the child from the ghetto area see the Anglo as smarter,

*The children of Mexican-American background were included in the first year's sample, but the selection in the second and third years took place in schools which were located in predominantly Black areas. As previously noted, the analysis of the ethnic attitude data is based on the second and third year samples.

happier and, rather unexpectedly, as kinder than the Black or Mexican-American boy. The latter are judged as more physically capable. In terms of the child's over-all self-image, it would be interesting to know the relative importance of these traits for the Advantaged and Disadvantaged child.

The Ethnic Attitude change scores, based on the second and third year groups, are presented in Tables 33 through 37. These data are not very illuminating and, in some respects, are rather disappointing. There are very few significant differences between the Fernald Disadvantaged and the Enrichment and Control groups in the degree and direction of change shown.* In their rankings of "Kindest Boy" (Table 33), the Fernald Disadvantaged elementary group increase their ranking of the Black stimuli while, at the same time, lowering the rankings of the Anglo photographs. The corresponding changes in the elementary Enrichment and Control groups are directly opposite in direction. Again, at the elementary level, both Fernald groups see the Black child as happier (Table 34) on re-testing than do the Enrichment and Control groups. However, the differences are reliable only for the Fernald Advantaged comparisons. Also at the elmmentary level, the Fernald Disadvantaged lowered their rankings of the Anglo stimuli in judging "Fastest Boy" (Table 37), while elevating the rankings of the Mexican-American and Black stimuli in compensating for this shift. There were no significant differences among the various groups in the changes observed in their rankings of boy with "Best Grades" (Table 35) and "Strongest Boy" (Table 36).

*An analysis of variance and contrast analysis was made of the change scores and, in addition, a covariance analysis was carried out on the post-test scores using pre-test scores as covariate. Both analyses showed similar results.

Table 33

Mean Change in Rank on Ethnic Attitudes Instrument Question "Kindest Boy" (as a function of ethnic background of child in photograph)

A. Photos of Anglo Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	0.83	-0.75	0.36	0.85	0.41
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	-0.22	-0.50	-0.78	0.86	-0.21
(n)	(18)	(16)	(18)	(14)	(66)
Total	0.31	-0.63	-0.15	0.85	0.13
(n)	(36)	(32)	(40)	(41)	(149)

B. Photos of Negro Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	-0.33	0.88	-0.73	-0.15	-0.14
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	0.44	0.88	1.00	0.64	0.74
(n)	(18)	(16)	(18)	(14)	(66)
Total	0.06	0.88	0.05	0.12	0.25
(n)	(36)	(32)	(40)	(41)	(149)

C. Photos of Mexican-American Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	-0.50	-0.13	0.14	-0.70	-0.33
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	-0.22	-0.38	-0.22	-1.50	-0.53
(n)	(18)	(16)	(18)	(14)	(66)
Total	-0.36	-0.25	-0.02	-0.98	-0.42
(n)	(36)	(32)	(40)	(41)	(149)

Table 34

Mean Change in Rank on Ethnic Attitudes Instrument Question "Happiest Boy"

(as a function of ethnic background of child in photograph)

A. Photos of Anglo Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	-0.33	-0.88	0.27	0.15	-0.12
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	-0.22	-0.69	-0.61	0.21	-0.35
(n)	(18)	(16)	(18)	(14)	(66)
Total	-0.28	-0.78	-0.13	0.17	-0.22
(n)	(36)	(32)	(40)	(41)	(149)

B. Photos of Negro Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	1.33	0.75	-0.32	0.19	0.41
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	0.61	0.06	-0.50	0.07	0.06
(n)	(18)	(16)	(18)	(14)	(66)
Total	0.97	0.41	-0.40	0.15	0.26
(n)	(36)	(32)	(40)	(41)	(149)

C. Photos of Mexican-American Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	-1.00	0.13	0.05	-0.33	-0.29
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	-0.39	0.63	1.11	-0.29	0.29
(n)	(18)	(16)	(18)	(14)	(66)
Total	-0.69	0.38	0.52	-0.32	-0.03
(n)	(36)	(32)	(40)	(41)	(149)

Table 35

Mean Change in Rank on Ethnic Attitudes
Instrument Question "Best Grades"
(as a function of ethnic background of child in photograph)

A. Photos of Anglo Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	-0.67	-0.81	-0.32	-0.04	-0.40
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	-0.61	-0.38	-0.72	0.71	-0.30
(n)	(18)	(16)	(18)	(14)	(66)
Total	-0.64	-0.59	-0.50	0.22	-0.36
(n)	(36)	(32)	(40)	(41)	(149)

B. Photos of Negro Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	-0.17	0.0	0.32	0.26	0.13
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	-0.17	0.44	0.28	-0.14	0.11
(n)	(18)	(16)	(18)	(14)	(66)
Total	-0.17	0.22	0.30	0.12	0.12
(n)	(36)	(32)	(40)	(41)	(149)

C. Photos of Mexican-American Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	0.83	0.81	0.0	-0.22	0.27
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	0.78	-0.06	0.44	-0.57	0.20
(n)	(18)	(16)	(18)	(14)	(66)
Total	0.81	0.38	0.20	-0.34	0.23
(n)	(36)	(32)	(40)	(41)	(149)

Table 36

Mean Change in Rank on Ethnic Attitudes Instrument Question "Strongest Boy"

A. Photos of Anglo Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	0.78	0.50	-0.50	-0.15	0.08
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	0.82	-0.06	0.22	-0.21	0.22
(n)	(17)	(16)	(18)	(14)	(65)
Total	0.80	0.22	-0.17	-0.17	0.14
(n)	(35)	(32)	(40)	(41)	(148)

B. Photos of Negro Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	0.22	0.19	0.23	0.07	0.17
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	0.12	0.0	0.67	0.07	0.23
(n)	(17)	(16)	(18)	(14)	(65)
Total	0.17	0.09	0.42	0.07	0.20
(n)	(35)	(32)	(40)	(41)	(148)

C. Photos of Mexican-American Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	-1.00	-0.69	0.27	-0.11	-0.31
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	-0.94	0.06	-0.89	0.14	-0.45
(n)	(17)	(16)	(18)	(14)	(65)
Total	-0.97	-0.31	-0.25	-0.02	-0.37
(n)	(35)	(32)	(40)	(41)	(148)

Table 37

Mean Change in Rank on Ethnic Attitudes Instrument Question "Fastest Boy"

(as a function of ethnic background of child in photograph)

A. Photos of Anglo Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	0.06	-1.69	0.82	1.07	0.25
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	0.11	-0.50	-0.78	-1.00	-0.52
(n)	(18)	(16)	(18)	(14)	(66)
Total	0.08	-1.09	0.10	0.37	-0.09
(n)	(36)	(32)	(40)	(41)	(149)

B. Photos of Negro Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	0.17	1.06	-0.14	0.07	0.23
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	0.67	-0.25	0.33	-0.36	0.14
(n)	(18)	(16)	(18)	(14)	(66)
Total	0.42	0.41	0.07	-0.07	0.19
(n)	(36)	(32)	(40)	(41)	(149)

C. Photos of Mexican-American Boys

	Fernald Adv.	Fernald Disadv.	School Enrich.	Control	Total
Elem.	-0.22	0.63	-0.68	-1.15	-0.48
(n)	(18)	(16)	(22)	(27)	(83)
Jr. Hi.	-0.78	0.75	0.44	1.36	0.38
(n)	(18)	(16)	(18)	(14)	(66)
Total	-0.50	0.69	-0.17	-0.29	-0.10
(n)	(36)	(32)	(40)	(41)	(149)

These data provide some evidence of a positive change in the Fernald Disadvantaged elementary children in the way in which they view members of their own ethnic group. However, this measure failed to reflect any reliable changes in the Fernald Disadvantaged junior high level boys as compared to the other two Disadvantaged groups. This is the only instance in which the Disadvantaged junior high boys attending the Fernald School displayed weaker experimental effects than their elementary counterparts.

d. Changes in Self-Attitudes

There were a number of efforts made during the course of the project to assess self-attitudes and possible changes in various self-attitude dimensions resulting from the experience of individualized instruction in a setting which attempted to maximize exposure to success. A number of the measures already described dealt with some aspect of self-attitudes. These include the Test Anxiety Scale for Children, the measure of Vocational Aspiration, and, in certain respects, the Locus of Control and also the Ethnic Attitude instruments.

Several additional procedures were adopted, modified, or eliminated during the course of the project. Reference has been made to the Semantic Differential instrument which was designed to tap the child's perception of himself as a reader, as a student, as a member of a particular ethnic group, and as a worthy human being. When this measure was eliminated, for reasons previously described, a more direct self-attitude inventory was designed and was introduced in the second year of the study. This inventory was constructed so that questions similar to those asked of the child, could also be asked of his teacher and of his parents. The inventory underwent considerable revision, so that a very modified, and more reliable and sensitive, scale was used in the third year of the program. As a result of these modifications, the number of children who were administered the final form is too small for appropriate statistical analyses, given the variability of these measures and especially of change scores. The inventory is now being utilized in other investigations that have developed from this project. For our present purpose, however, we shall use it only for illustrative purposes, selecting those items that closely relate to the child's educational experience, and further restricting the discussion to the items administered to the child.

The inventory consisted of several related but different procedures for eliciting the child's self-evaluation. One of these simply consisted of a graphic rating scale ranging from Extremely Poor to Extremely Good. Scores on this scale could range from 1 to 25, the higher scores indicating more favorable self-ratings. Included in these self-ratings were the child's estimate of his performance in basic academic skills.

The pre-test and change means for the child's estimate of his performance in Reading are presented in Table 38. The pre-test measure, which was obtained about a month after the semester had begun, reflects initial differences among the Disadvantaged groups, the children attending the Fernald School having the highest ratings and the Enrichment children, the lowest ratings. Because of the small N and the high variability, one cannot draw any conclusion from the change scores. It is nevertheless of interest that the Fernald elementary Disadvantaged children decline in their self-ratings while the Advantaged children increase. The initial rating of the Fernald Disadvantaged was clearly unrealistic since the scores average close to the maximum of 25. The changes, therefore, may reflect a more realistic, rather than a more negative, self-evaluation. These two possible interpretations of the self-evaluation data, while not mutually exclusive, nevertheless need to be distinguished where possible.

The ratings of Arithmetic ability presented in Table 39 yield a similar picture, with the exception of the more substantial rise in the self-rating of the Fernald Disadvantaged junior high school groups. This increment correlates very well with the change in the performance of these boys on the California Achievement Test. These junior high boys (and the elementary Disadvantaged boys as well) also increase their estimate of their ability in story-writing in comparison to the changes in the Controls (Table 40). While the Enrichment group shows an increment in this rating relative to the Controls, the difference is small. In contrast to the changes in the Fernald Disadvantaged boys, there is no consistent trend in the changes in self-estimates of the Enrichment children.

The corresponding data reflecting changes in feeling about Reading, Arithmetic, and Story Writing are presented in Tables 41 to 43. The most noteworthy aspect of these data is the positive feeling which the Fernald Disadvantaged sample has about reading, especially after they have completed an academic year. The change in positive feelings about Arithmetic in the Fernald junior high level Disadvantaged boys is consistent with their estimate of their performance and their actual performance in this area.

The responses to two additional questions are included here, primarily because of their disparity. The data in Table 44 reflect the child's general estimate of his performance in schoolwork. The data in Table 45 reflect the degree to which the child likes the school he is in. Despite the fact that the Fernald Disadvantaged junior high boys increase an already

Table 38

Mean Self-Rating of Ability in Reading

A. Pre-Measure

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	15.25	22.11	16.50	20.79
	(n)	(8)	(9)	(16)	(14)
Jr. Hi.	Mean	17.89	18.00	12.78	16.29
	(n)	(9)	(9)	(9)	(7)

B. Change Pre-Post

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	5.62	-4.11	3.12	-0.79
	(n)	(8)	(9)	(16)	(14)
Jr. Hi.	Mean	0.0	1.22	1.33	-0.29
	(n)	(9)	(9)	(9)	(7)

Table 39

Mean Self-Rating of Ability in Arithmetic

A. Pre-measure

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	20.75	21.22	21.19	17.57
	(n)	(8)	(9)	(16)	(14)
Jr. Hi.	Mean	16.78	15.89	13.44	15.43
	(n)	(9)	(9)	(9)	(7)

B. Change Pre-Post

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	1.87	-0.56	-0.69	2.21
	(n)	(8)	(9)	(16)	(14)
Jr. Hi.	Mean	-0.78	4.22	0.78	-0.86
	(n)	(9)	(9)	(9)	(7)

Table 40

Mean Self-Rating of Ability in Story-Writing

A. Pre-Measure

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean (n)	17.75 (8)	16.89 (9)	19.69 (16)	20.43 (14)
Jr. Hi.	Mean (n)	20.11 (9)	21.00 (9)	13.22 (9)	14.17 (6)

B. Change Pre-Post

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean (n)	0.13 (8)	3.44 (9)	-0.63 (16)	-2.50 (14)
Jr. Hi.	Mean (n)	-0.67 (9)	1.33 (9)	2.33 (9)	0.0 (6)

Table 41

Mean Self-Estimate of Feelings About Reading

A. Pre-measure

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean (n)	15.11 (9)	17.67 (9)	19.44 (16)	19.21 (14)
Jr. Hi.	Mean (n)	16.56 (9)	16.56 (9)	13.62 (8)	15.71 (7)

B. Change Pre-Post

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean (n)	-1.00 (9)	3.33 (9)	1.25 (16)	-1.29 (14)
Jr. Hi.	Mean (n)	-2.22 (9)	2.78 (9)	-0.50 (8)	0.86 (7)

Table 42

Mean Self-Estimate of Feelings About Arithmetic

A. Pre-Measure

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	19.56	21.67	18.06	19.00
	(n)	(9)	(9)	(16)	(14)
Jr. Hi.	Mean	16.78	16.56	13.37	15.57
	(n)	(9)	(9)	(8)	(7)

B. Change Pre-Post

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	1.67	-0.33	3.44	1.86
	(n)	(9)	(9)	(16)	(14)
Jr. Hi.	Mean	1.22	2.89	-5.87	-1.43
	(n)	(9)	(9)	(8)	(7)

Table 43

Mean Self-Estimate of Feelings About Story-Writing

A. Pre-Measure

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	16.22	18.00	20.56	19.71
	(n)	(9)	(9)	(16)	(14)
Jr. Hi.	Mean	15.67	18.44	13.25	14.00
	(n)	(9)	(9)	(8)	(6)

B. Change Pre-Post

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	-4.22	2.44	-2.81	-0.64
	(n)	(9)	(9)	(16)	(14)
Jr. Hi.	Mean	1.67	-1.00	0.0	-2.00
	(n)	(9)	(9)	(8)	(6)

Table 44

Mean Self-Ranking of General Ability in Schoolwork Compared to Others in Classroom

A. Pre-Measure

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	19.78	18.11	20.38	16.86
	(n)	(9)	(9)	(16)	(14)
Jr. Hi.	Mean	17.33	17.78	14.44	15.43
	(n)	(9)	(9)	(9)	(7)

B. Change Pre-Post

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	0.33	2.22	0.25	1.64
	(n)	(9)	(9)	(16)	(14)
Jr. Hi.	Mean	-3.00	1.22	-1.56	0.0
	(n)	(9)	(9)	(9)	(7)

Table 45

Mean Self-Estimate of Feelings About School

A. Pre-Measure

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	23.56	23.00	20.38	16.79
	(n)	(9)	(9)	(16)	(14)
Jr. Hi.	Mean	18.44	19.00	14.44	18.29
	(n)	(9)	(9)	(9)	(7)

B. Change Pre-Post

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	0.33	0.44	-0.38	1.29
	(n)	(9)	(9)	(16)	(14)
Jr. Hi.	Mean	-1.78	-4.78	1.00	-1.57
	(n)	(9)	(9)	(9)	(7)

high self-estimate of their schoolwork performance after completing an academic year at the Fernald School, their attitude toward the school shows a decided drop. They also show an equivalent drop in the degree of liking expressed toward the school attended before they came to the Fernald School. In contrast, the elementary boys express a strong initial liking for the school which they maintain during the academic year. The reaction of the junior high group is difficult to explain. Although the decrement is not statistically reliable, in view of the academic gains, one might have expected an increment. Furthermore, many of these boys expressed an interest in returning to the school. As a result of this interest and the indications that an additional year would be of value to them, an effort has been initiated to find scholarship support for their tuition after the project has been concluded. In view of the reactions of the boys during our interviews with them, we are inclined to consider the "drop" as a defensive reaction or unreliable (which it is in comparison to changes in the Controls). However, there is no doubt that, given our personal involvement, we would have preferred to have seen a positive increment in liking.

5. Cognitive Differences between Advantaged and Disadvantaged

a. Subtests of the WISC

Three sub-tests of the Wechsler Intelligence Scale for Children (WISC) -- Comprehension, Arithmetic, and Vocabulary -- were administered at the beginning and at the end of the experimental period. These data have been discussed, the principal focus of interest being the comparison of change scores among the Disadvantaged groups. The present focus of interest is on a secondary issue, namely, similarities and differences between the Advantaged and Disadvantaged learning disorder samples. The summer session study data bear primarily on this question. In addition, a number of measures were given, including several additional sub-tests of the WISC, on only one occasion, to the boys participating in the academic year experimental study.

To compare the Advantaged and Disadvantaged populations, it would be appropriate to combine all three disadvantaged groups on those measures where there were no significant differences among them. We have not yet carried out this particular comparison, but have compared the Advantaged with each of the three Disadvantaged groups. In order to simplify the presentations of these data and since there were some procedures administered only at the Fernald School, we restrict the comparisons to the Fernald School population.

A short form of the WISC was administered to all groups during the second and third years of the project. As Table 46 indicates, the means are somewhat lower than in the case of the I.Q. data previously reported for the entire sample, but the size of the differences between the Advantaged and Disadvantaged boys is comparable to the data cited in Table 6. The finding that the Disadvantaged boys have a lower I.Q. comes as no surprise inasmuch as a more liberal interpretation of "average" I.Q. was used in selecting the Disadvantaged group for participation in the study. Given this over-all I.Q. difference, it is the pattern of sub-test scores that is of particular interest. The largest differences between the Fernald Disadvantaged and Advantaged boys, and the only individually reliable ones, are on the Vocabulary and Similarities sub-scales. Both of these entail a high verbal factor. While the Comprehension sub-test is also a matter of verbal understanding, it does not require verbal definition as is the case for

Table 46

Fernald Advantaged and Fernald Disadvantaged IQ Scores Based on a Short Form of the WISC

A. Mean IQ Scores

	Fernald Adv.	Fernald Disadv.	p value of diff.
Elementary	96.47	89.53	p < .05
	(19)	(19)	
Junior High	95.40	89.72	p <.10
	(20)	(20)	

B. Sub-Test Scores

	Elementary			Junior High		
	Fernald Adv.	Fernald Disadv.	p value of diff.	Fernald Adv.	Fernald Disadv.	p value of diff.
Comprehension	7.9	8.4	NS	9.2	8.1	NS
Arithmetic	8.6	7.6	NS	7.5	8.0	NS
Vocabulary	10.7	8.7	<.005	9.9	8.1	<.005
Similarities	10.2	8.8	<.10	10.7	8.9	<.05
Picture Arrangement	9.7	8.7	NS	9.2	8.7	NS
Block Design	10.0	9.1	NS	10.1	9.4	NS

Vocabulary and Similarities. Since the sample is small and the array of measures is limited, one cannot conclude that intellectual differences between Advantaged and Disadvantaged learning problem populations lie primarily in the area of verbal proficiency. Thus, the differences on the performance measures - Picture Arrangement and Block Design -- although not reliable, are suggestive of possible intellectual differences in non-verbal areas. Even so, one can point to attitudinal factors influencing scores on the performance tests, namely, the degree of incentive created by and the responsiveness to the timed nature of these tests.

b. Locus of Control and Locus of Evaluation

One of the motivational-cognitive areas that we were particularly interested in investigating was the child's perception of the extent to which he could influence his own fate and of the extent to which he used internalized standards in evaluating himself. There is some evidence that disadvantaged populations are more likely to perceive themselves as controlled by external and accidental forces than are middle and upper income groups (a not necessarily inaccurate perception). More germane to the present study, the Coleman report suggests that one of the best predictors of the disadvantaged child's response to special experiences is the extent to which he feels he can control his own fate.

The initial instruments we adopted to assess this dimension did not prove to be very satisfactory for a number of reasons and, during the second and third years of the project, we used the Locus of Control and Locus of Evaluation instruments which are described in Appendix 4. The former scale assesses the degree to which the child feels that he, himself, versus external forces has control over his behavior, while the latter focuses on the basis for his self-evaluations. Higher scores on these scales reflect greater feelings of autonomy, self-reliance, and self-control.

The data presented in Table 47 reflect a number of interesting trends. First, there is clear evidence of an age factor, the elementary boys obtaining reliably lower "internalization" scores on both instruments than the junior high boys. Secondly, there is very little difference at the elementary level between the Advantaged and Disadvantaged groups, but a number of interesting differences emerge at the junior high level on the Locus of Control Scale. The Advantaged group obtained significantly higher scores than the Controls, and also obtained higher scores than the Enrichment group, although the latter difference fell short of statistical significance. What is most interesting, however, is the finding that the Fernald Disadvantaged boys obtained reliably higher scores than those obtained by either the Control or Enrichment groups. This Locus of Control measure was administered a few weeks after the initiation of the experimental program, and these differences suggest that the exposure of the Disadvantaged boys to the Fernald School resulted in stronger feelings of autonomy and a greater acceptance of personal responsibility for one's own performance and actions.

c. Witkin Rod and Frame Measure of Field Dependence

The Witkin Rod and Frame test is conceptually related to the Locus of Control measure although it employs a very different procedure. The Locus of Control score is based upon a questionnaire whereas the Witkin test consists of a perceptual task. In essence, the child given the Witkin task is required to adjust the verticality of a figure while receiving conflicting cues through the tilting of a frame surrounding the

Table 47

Mean Scores on Locus of Control and Locus of Evaluation*

A. Locus of Control

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	13.7	13.9	14.1	13.5
	(n)	(18)	(18)	(32)	(32)
Jr. Hi.	Mean	16.8	17.2	15.2	14.6
	(n)	(20)	(19)	(19)	(16)

B. Locus of Evaluation

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	14.2	13.8	14.2	14.7
	(n)	(18)	(18)	(32)	(32)
Jr. Hi.	Mean	17.2	16.2	16.3	15.6
	(n)	(20)	(19)	(19)	(16)

*High score reflects greater internalization.

figure or the tilting of his chair and body.*

Scores on the Witkin test are derived as follows: First, the experimenter tilts the figure and frame four times, using four different combinations of left and right tilt. Each time, the subject attempts to return the figure to an upright position and both the degree and direction of the figure's deviation from true vertical are measured. The sequence of four tilt combinations is then repeated with the subject's chair tilted 28 degrees to the right (by placing a special block under the legs of the chair). Finally, four more measures are obtained with the chair tilted to the left. Twelve measures of deviation are thus obtained, representing all combinations of frame, figure, and chair tilt. The final score is the sum of the twelve deviations, ignoring direction of deviation. A high score represents great overall deviation, or dependenee upon the tilted frame for orientation; a low score represents a low deviation, or relative independenee of the frame.

The data presented in Table 48 reflect considerable variability on this measure. Again, we find an age difference, the older boys obtaining significantly lower error scores. With respect to experimental group differences, the Advantaged elementary boys do significantly better on this task than do the Disadvantaged elementary groups (combined). Except for an elevation in the School Enrichment subjects, the basis for which is not evident, the scores of the Advantaged and Disadvantaged boys at the junior high level are comparable.

Although this measure has been theoretically related to the Locus of Control dimension, it appears from these data (and from other studies as well), that the Witkin test is assessing a different behavioral trend than

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* This measure was not administered during the third year of the study because of apparatus problems.

Table 48

Field Dependency (Witkin) Test Total Error Means

		Fernald Adv.	Fernald Disadv.	School Enrich.	Control
Elem.	Mean	41.62	63.68	61.64	82.04
	n	(20)	(17)	(22)	(21)
Jr. High	Mean	25.27	26.00	55.03	27.61
	n	(22)	(18)	(19)	(18)

the Locus of Control measure. They both entail a skill or process on which children improve with age. However, in contrast to the Locus of Control findings, there is a difference at the elementary age level between Advantaged and Disadvantaged boys on this perceptual task and the improvement in performance with age apparently eliminates this difference.

C. Summer School Programs

The primary purpose of the Summer School programs, conducted in the summers of 1966 and 1967, was to provide a demonstration remedial program for culturally disadvantaged youngsters which could serve as an effective setting for the training of counselors, teachers, and related school personnel. We were also interested in appraising some of the cognitive and motivational differences and similarities between two groups of youngsters with learning problems -- Advantaged and Disadvantaged. In this latter connection, we were especially interested in comparing the effects of the summer program on these two groups. It should be noted that we were less successful in providing an adequate Advantaged match for the Disadvantaged sample than in the academic year experimental program. The advantaged population attending the Fernald School during the summer tends to be less severely retarded in basic skills than the children attending during the academic year; hence it was more difficult to match the groups for initial Achievement test scores.

1. Achievement Tests

The mean pre-test scores on the sub-scales of the CAT for the summer session Advantaged and Disadvantaged groups are presented in Table 49. It can be seen from the table that the Advantaged children obtain higher scores on each sub-test, at both the elementary and junior high levels,

Table 49

Summer Session: Pre-Test Achievement Score Means

Elementary	RV.	RC.	Tot Rdg.	AR.	AF.	Tot Arith.	EM.	SP.	Tot Lang.
Adv. (41)	3.5	3.2	3.4	3.6	3.9	3.8	3.7	3.4	3.6
Disad. (35)	2.9	2.7	2.9	3.0	3.7	3.4	3.0	2.6	3.0
p value of diff.	<.10	NS	NS	<.10	NS	NS	<.10	<.05	<.05

Junior High	RV.	RC.	Tot Rdg.	AR.	AF.	Tot Arith.	EM.	SP.	Tot Lang.
Adv. (33)	6.5	6.7	6.6	7.2	7.1	7.2	6.8	5.8	6.5
Disad. (33)	5.5	5.5	5.4	5.9	6.3	6.1	5.7	5.4	5.6
p value of diff.	<.05	<.01	<.01	<.001	<.05	<.01	<.01	NS	<.01

the difference being stronger at the latter level. While most of the differences at the elementary level are not statistically reliable, these initial differences on the pre-measures could influence the change scores and consequently the interpretation of any differences between groups in the amount of change.

However, from Table 50, it appears that there was little difference between the Advantaged and Disadvantaged children in the amount of progress they made. A more pertinent factor influencing the degree of change proved to be the grade level of the children, the elementary children making reliably smaller gains than the junior high groups on most of the sub-tests. While test factors at different age levels may contribute to this difference, there may have been substantial differences in the experiences and responsiveness of the two age groups, e.g., the elementary children may have taken more time in adapting to the summer school setting. The size of the gains is substantial, especially when compared to that achieved during the academic year. Thus, the gains at the elementary level, during half-day, six-week summer session, was from one-third to one-fourth of the increment achieved over the nine-month academic year, while the gain at the junior high level was about half of that accomplished during the academic year (higher in Reading and Language skills). Without a control group, however, it is difficult to assess the importance and significance of these gains. Thus, there may have been a substantial gain due to being retested on the Achievement tests within a six week interval. Nevertheless, the size of the increments for the junior high groups suggests that the summer program was quite effective for this age group, and was of help to both Advantaged and Disadvantaged children with learning problems.

Table 50

Summer Session Mean Achievement Test Change Scores

Elementary	RV	RC	Tot Rdg	AR	AF	Tot Arith	EM	SP	Tot Lang.
Adv. (41)	.13	.40	.26	.52	.09	.28	.26	.26	.28
Disadv. (35)	.23	.51	.30	.44	.19	.32	.34	.30	.32
p value of diff.	NS	NS	NS	NS	NS	NS	NS	NS	NS

Junior High	RV	RC	Tot Rdg.	AR	AF	Tot Arith	EM	SP	Tot Lang.
Adv. (33)	.91	.93	.94	.32	.52	.36	.64	.57	.68
Disadv. (33)	.44	.71	.69	.33	.42	.43	.83	.31	.71
p value of diff.	NS	NS	NS	NS	NS	NS	NS	NS	NS

2. Other Measures

The primary evaluative instrument used in the summer programs was the CAT, but a number of other measures were used on a preliminary basis -- some extended to the academic year program and others being dropped or replaced by different procedures. The Test Anxiety measure was administered twice and reflected trends similar to that observed in the academic year sample. There was an initial difference in degree of anxiety at the junior high level between the Advantaged and Disadvantaged children, although the difference fell short of significance. On the post-test, however, the means were comparable. A measure of expectancy of success in different skill areas was also administered twice to evaluate any changes in motivation and self-perception, but reflected very few differences between the Advantaged and Disadvantaged groups. The pre-test revealed the not very surprising finding that younger children have more optimistic expectancies regarding their skills vis-a-vis their peers than do older children. The Disadvantaged tended to think of themselves as more capable in athletics than did the Advantaged, but in other respects, the two groups were similar. Also. the amount of change was comparable in both groups, generally reflecting a more positive appraisal of skills after participation in the summer school program.

In general, the summer school experience appeared to have had a favorable cognitive and motivational influence on the participation of the students, both Advantaged and Disadvantaged children showing comparable effects. No controls were used nor follow-ups made, since the summer school program was used for research purposes only secondarily. The results are sufficiently promising to warrant a more systematic investigation of the effects of comparable summer school experiences and, more particularly, the determination of the contributions of a half-day versus a full day and delimited remedial versus extended remedial experiences in an individualized setting on children with learning disabilities.

D. A Follow-up Study of One Group

Fourteen of the eighteen disadvantaged boys who had attended the Fernald School during the 1966-67 academic year, and their parents, were interviewed. In addition, a comparison was made of grades and attendance between this group and the Control sample who had remained in their own home school.

For the interview phase of the study, eighteen families were contacted by social work students. Of the original eighteen boys, three had moved out of the state, and the mother of one declined to engage in the interviews. Records showed that she had been extremely difficult to involve during the previous year. Fourteen boys were interviewed. Twelve mothers, one older sister, and one father were interviewed as parents or, in the one case, as parent surrogates.

To attain as high a degree of interviewer consistency as possible, there were several training and preparation sessions for the interviewers focusing on the objectives of the interviews, the relevance of the questions to these objectives, and the possible problems that might arise. Agreement was reached on which questions would be pursued by probes. To further standardize interviewing techniques, two of the social work students interviewed only the boys, while the other two interviewed only parents. The interviewers went out as teams, one member interviewing the boy, while the other member interviewed the mother. The interviews were conducted in separate rooms. Assignment of respondents was random, with the two teams switching partners after half of the interviews.

The boys were asked to compare the physical plants, the teachers, the studies, and their fellow students. The interviewers also asked for more subjective answers about their feelings about going to a school so far from home and their reactions to returning to their home schools. It was hoped in this way to obtain a general picture of whether their impression of the different aspects of the Fernald School experience six months after they had left the program was positive or negative, and on what that impression was based.

Although the numbers involved are small, the attitudes of the parents and children are sufficiently uniform to permit some general conclusions concerning their reactions to the Fernald School. In Table 51 are presented the parents' ratings of the Fernald School as compared to the school the child attended before participating in the experimental program. Of the three questions tabulated, one discriminated between the Fernald School and the other schools. There was little difference in the parents' perception of his child's happiness and treatment by other children at the Fernald versus the other schools. However, a significantly greater proportion of the parents believed their child was treated better by the teachers at the Fernald School than at their local schools. The parents' perception of the helpfulness of the Fernald School experience is reflected in Table 52. Twelve of the fourteen parents felt that the experience was of aid to their child, while only one thought it had not helped. When the parents were asked to elaborate on their answers, they made such comments as: "made him a little smarter", "more aware", "thinks clearer", "has

Table 51

Parents' Rating of Past and Present Schools
Compared to Fernald School

(follow-up of 66-67 group)

	Fernald School	Present School	No Preference
Child was happier at	5 (35.7%)	7 (50%)	2 (14.25)
*Child was treated better by teachers at........................	9 (64.2%)	0	5 (35.7%)
Child was treated better by other kids at......................	3 (21.4%)	3 (21.4%)	8 (57.2%)

$*X^2 = 5.78 = p<.02$

	Fernald School	Former School	No Preference
Child was happier at...............	8 (57.2%)	4 (28.6%)	2 (14.2%)
Child was treated better by teachers at........................	5 (35.7%)	0	9 (64.2%)
Child was treated better by other kids at......................	1 (7.1%)	0	13 (92.8%)

more confidence". Some had more specific behaviors in mind: "work habits are better", "attitudes better, more respect for teachers", "now has specific goals--wants to be an English teacher", "does extra homework", "studies better", "better grades". A few who answered this question affirmatively also had reservations: "improvement in grades did not last", "no improvement in grades", "still doesn't like to study". Several of the parents mentioned the problem of the child being stigmatized by the children in the neighborhood. On the whole, however, the experience was judged to be a positive one.

The interviews of the children also reflect a positive attitude toward their Fernald School experience, although a number of the children indicated that they would not want to leave their friends again and several were disturbed by the readjustment to the local school. Comparisons of the Fernald School teacher with their present teachers are presented in Tables 53 and 54. It can be seen from these tables that the children felt that the Fernald class was "happier" than the local school class, that the Fernald teacher was friendlier, and that the Fernald teacher was preferred to the local teacher, past or present, by a high proportion of the children.

The important point here is not that the children liked the Fernald teacher. Rather, what is significant is that these children developed a positive attitude toward a school teacher who employed a particular kind of teaching method that was individually oriented, that attempted to maximize success, reduce anxiety and instill self-confidence. The positive attitude elicited by this kind of approach to the child is also reflected in the fact that twelve of the fourteen children felt that attending the Fernald School had helped them; this despite the fact that they were evenly split in their willingness to return to the school, the reluctance to attend the

Table 52

Parents' Perception of Helpfulness of Fernald Experience in Making Children Better Students

(follow-up of 66-67 group)

Fernald School helped	Fernald School did not help	Do not know
*12 (85.7%)	1 (7.1%)	1 (7.1%)

*($X^2 = 8.64 = p<.005$)

Table 53

Comparison of Present Teacher with Fernald Teacher

(follow-up of 66-67 group)

Quality Rated	Fernald Teacher	Present Teacher	No Preference
Friendlier.....................	10 (71.4%)	2 (14.2%)	2 (14.2%)
More Helpful..................	7 (50.0%)	7 (50.0%)	2 (14.2%)
Knows More....................	5 (35.7%)	5 (35.7%)	4 (28.6%)
Happier Class.................	8 (57.2%)	3 (21.4%)	3 (21.4%)
Teacher Liked Better..........	7 (50.0%)	2 (21.4%)	4 (28.6%)

Table 54

Comparison of the Previous Teacher with Fernald Teacher

(follow-up of 66-67 group)

Quality Rated	Fernald Teacher	Previous Teacher	No Preference
Friendlier....................	11 (79.2%)	1 (7.1%)	2 (14.2%)
More Helpful..................	9 (64.2%)	2 (14.2%)	3 (21.4%)
Knows More....................	6 (42.8%)	5 (35.7%)	3 (21.4%)
Happier Class.................	11 (79.2%)	2 (14.2%)	1 (7.1%)
Teacher Liked Better..........	12 (85.6%)	0	2 (14.4%)

Table 55

Distribution of Number of Absences

(follow-up of 66-67 group)

Elementary and Junior High Experimental Group (Combined) (N = 15)		Elementary and Junior High Control Group (Combined) (N = 15)	
2	1	0	5
4	10	6	3
9	2	4	2 1/2
17	0	6	0
9	31 1/2	35	9
6	0	19	8
2	1	2	19
5		3	
Mean	6.6	Mean	7.1

Fernald School again being largely due to separation from their neighborhood friends. What these children would clearly like is an organizational structure and atmosphere in their local school which is similar to that characterizing the Fernald School.

Because of some problems in readministering the achievement tests, the students' grade point averages were used as the measure of academic progress. Attendance records were also taken. As Table 55 indicates, the mean number of absences in the Control and Experimental groups were comparable. In view of the small numbers involved, one must be cautious in inferring conclusions from the absence of statistically significant differences. A similar statement pertains to Table 56 in which the grade point averages for the elementary and junior high Experimental and Control groups are presented. For the elementary school students, the reading, spelling, and mathematics grades were averaged. The junior high school averages are based on the English and mathematics grades. The recorded letter grades were translated into points according to the following system: A=4, B=3, C=2, D=1, and F=0. The difference between the experimental and control elementary groups, although falling short of statistical significance, is nonetheless noteworthy. The mean for the experimental elementary group reflects almost a full additional grade point over the mean for the elementary control group.

The effects of the experimental program conducted at the Fernald School appear to have been much stronger on the children's attitudes than upon their performance, although there are some indications of an effect on the performance of the elementary age youngsters. Follow-up of the 1967-68 and 1968-69 groups will provide a better opportunity to evaluate the

Table 56

Grade Point Averages

(follow-up of 66-67 group)

Elementary School Experimental Group

(N = 6)

	10 week grades	20 week grades
	2.3	2.7
	2.0	2.7
	1.0	.34
	1.0	1.0
	2.3	2.3
	2.0	2.0
Mean	1.76	1.84

Elementary School Control Group

(N = 5)

	10 week grades	20 week grades
	1.0	1.0
	2.0	2.0
	.67	.67
	1.0	1.0
	1.0	.34
	1.13	1.00

Junior High School Experimental Group

(N = 9)

	10 week grades	20 week grades
	1.5	2.5
	1.5	2.0
	2.5	1.5
	1.5	1.5
	1.5	1.5
	1.5	1.0
	2.0	3.0
	1.0	1.0
	2.0	2.0
Mean	1.66	1.77

Junior High School Control Group

(N = 10)

	10 week grades	20 week grades
	2.5	2.5
	1.5	1.0
	1.5	2.0
	2.5	3.5
	1.5	1.5
	1.0	1.0
	1.5	2.0
	1.5	2.0
	2.0	2.0
	2.5	2.0
Mean	1.8	1.95

enduring effects of the remedial program. Reference has been previously made to the implications of this kind of outcome -- a compensatory program in a special setting producing significant, positive changes which become sharply attenuated, or disappear, when the child returns to his regular school setting. The dissipation of the increments in achievement can be reasonably attributed to inadequacies in the regular school program as well as in the compensatory program. The child's behavior is clearly a function of both factors. A compensatory program should be able to prepare a child so that he can function in a variety of school settings. At the same time, the school setting should be able to maintain and reinforce the academic gains achieved by the child in the compensatory program.

III. Discussion and Conclusion

A. Introduction

There are several clear-cut findings that emerge from the detailed presentation of the data, other findings which form a trend consistent with the principal results, and still other data which are only suggestive or ambiguous. The major experimental finding is clearly the increase in achievement observed in the Disadvantaged children attending the Fernald School and the failure of the Enrichment program to exert an influence significantly greater than that provided by the Control experience. The CAT findings are buttressed by the qualitative performance of the Fernald group, especially by their writing, and by a significant increment on the Arithmetic sub-test of the Wechsler Intelligence Scale for Children. These effects are generally stronger for the junior high group than for the elementary group.

One of the cognitive areas that did not reflect any experimental effects was Vocabulary. Possible reasons for this have already been discussed. In addition, the improvements noted in Achievement Test performance were not accompanied by significant changes in perceptual skills. The Disadvantaged elementary group did show initial deficiencies in this area and did improve in performance, but those changes appeared to be unrelated to the experimentally produced changes in the more complex basic school skills.

The analyses of motivational, self-attitude and ethnic attitude changes yielded sporadic findings which, when significant, were consistent with the Achievement Test findings. On the whole, however, from these data it would appear that profound or systematic changes in these affective areas did not take place as a result of either the Fernald or Enrichment experiences. This conclusion may be, in part, misleading in that there are a number of findings which indicate that initial placement at Fernald School significantly and favorably modified the expectancies and self-attitudes of the junior high school Disadvantaged boys. Thus, a significant change on the post measure had to be over and above this initial effect. The follow-up study of one experimental and Control group reflected positive attitudinal changes although there appeared to be little subsequent effect on grades received. The performance of the four youngsters who remained a second year at the Fernald School suggests that an additional year of individualized instruction might have served to strengthen and maximize the changes obtained in the initial year. Thus the fact that one group of boys, on returning to their home school, does not perform substantially better than the Controls (while performing better, the difference was not reliable), does not necessarily lead to the inference that the year's experience was unimportant for the child. Rather, it may indicate that a greater length of exposure to the individualized instructional program was required or that the school to which the child returned was unable to take advantage of and foster these gains.

When the Disadvantaged youngsters are compared with the Advantaged learning disorder population, a number of cognitive differences emerge -- in vocabulary and, for the younger age group, on the perceptual tasks. At the same time, there are striking areas of similarity between the two groups on other cognitive tasks and, in addition, on most of the motivational and attitudinal measures. These data bearing on the cognitive and motivational attributes of the Advantaged and Disadvantaged youngsters, when considered in conjunction with the experimental findings regarding the effects of the Fernald and Enrichment programs, have implications for a number of current educational issues. The quantitative findings and the qualitative observations point to a number of interesting and, in our view, significant propositions and conclusions. These will be elaborated below.

B. The implications of being "Culturally Disadvantaged"

The phrase "culturally disadvantaged" is used to describe children from low-income families. However, the phrase implies more than being economically poor. It also carries with it the implications that the child has been raised in a cultural setting which has provided inadequate intellectual stimulation and which is characterized by social mores and values which are different from, and sometimes in conflict with, the prevailing middle class norms. There is a mass of sociological, psychological, and educational data which indicates that the socio-economic milieu in which a child is raised has a profound effect upon school achievement, his relationship to authority and other significant behaviors. However, the processes through which the social milieu produces the bahavioral consequences are by no means agreed upon or obvious. There are very different views as to what the critical variables are, and the judgment as to which processes or variables are critical determines the kinds of intervention used to bring about change. Some experts stress the differences in values between lower class and middle class groups and argue that the inferior school performance of the lower class child is due to the conflict between his cultural norms and the middle class values which characterize public schools; some emphasize the role of family disorganization, while others maintain that the lack of economic opportunity is the central factor. Some believe that the critical influences occur before the child even enters public school and are pessimistic about subsequent efforts at remediation. There is also an implicit and sometimes explicit conflict between proponents of integrated schools and of advocates of compensatory educatoon. These diverse factors and approaches are not mutually exclusive. All may have merit, and efforts in all of these directions may be helpful.

At the same time, if one leaves the level of generality and considers the specific implications of some of these positions, there are aspects which, in our view, are questionable or simply false.

When the label "culturally disadvantaged" is applied to a child, it has a number of connotations, some of which we had occasion to examine during the course of our study. We were particularly interested in those which bear upon the relationship of the child and his family to the school.

1. Attitude of Child's Family Toward Education

One of the value discrepancies that has been assumed to exist between the families that live in our urban slums and middle class families is the importance placed upon education. It is argued that the school represents a middle class institution and the "culturally disadvantaged" child does poorly in school because his family rejects this institution and its objectives. Our experience suggests that the contrary is true; that the lower class family places a high value upon educational objectives.

This assertion is based upon the following observation. For the project conducted during the summers of 1966 and 1967, 80 out of 87 families that were initially contacted agreed to send their children to a special summer remedial program that was to begin, in many instances, within a few days after the family was contacted. This remarkable degree of responsiveness to an educational opportunity for their children was repeated by parents of culturally disadvantaged children who were contacted in connection with the academic year program. Some 53 of the 60 families whose children had been randomly assigned to the Fernald School agreed to send their children to the school for the academic year. The children and their families were not a select group of volunteers. Rather, they are representative of the disadvantaged population with learning disabilities in the schools from which the samples were drawn.

There is little doubt that these parents value education. Why, then, has it been noted that these disadvantaged groups do not share the middle class attitude concerning the importance of education? We venture to suggest, partially on the basis of our own experience, and partially on the basis of published material, that the disadvantaged family's seeming lack of interest in school is due to their negative experiences with school. The children who have been selected for this study are doing poorly in school. Many of them display behavior problems as well as academic problems, and their school records tend to reflect a series of difficulties with the school authorities. When the parent is called to school under these circumstances, his contact with the school is likely to be a painful one for him. Because their children have learning problems, these painful contacts are not compensated for by pride in their child's achievements in school. It is hardly surprising that these parents have ambivalent feelings toward the public school and may not take advantage of the opportunity to participate in parent groups and other school-related activities. In this connection, limited access to baby-sitters and the fact that often both parents may be working at odd hours are factors which operate as deterrents to participation in school functions. When we took cognizance of these factors, providing a bus when parent meetings were held some distance from their homes and arranging the meetings at hours which were convenient for the children's families, attendance at these meetings substantially increased.

We cannot emphasize too strongly that avoidance of school or the expression of negative feelings toward schools are not equivalent to a devaluation of or lack of interest in education. These parents value school achievement, and our data and contacts with the families of the disadvantaged children indicate that, in this respect, they are no different from the typical middle class family.

2. Attitude of Child Toward Education

In our interviews of and discussions with the culturally disadvantaged children who participated in the Fernald School program, the children professed to value school attainment but, as might be expected in view of their past performance, lacked confidence in their ability to succeed in school. The children participating in the School Enrichment program reflected similar attitudes. The revised Attitude Survey administered to the 1968-1969 experimental groups clearly supports the proposition that school performance is an important value for the Disadvantaged youngster. Included in that survey were a number of items in which the children were asked to indicate how important a particular goal or activity was to them. The mean rating (out of a possible maximum of 25 points) of the Disadvantaged groups for Sports was 20.4, for Popularity - 19.2, for Good Class Behaviour- 21.3, for Good Field Behavior - 20.2, while for School Grades, the mean was 22.8. On the post-test, the mean rating for grades increased to 23.5. All of the Disadvantaged groups shared this

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value, their respective mean rating being highly similar. The mean ratings of the Advantaged boys for Grades were also similar, changing from 21.9 in the fall to 22.6 in the spring.

One can question the verbal statements made by the children during interviews or in response to the Attitude Survey. It can be reasonably argued that the school record of these children - their poor academic performance, relatively poor attendance, and conflict with school authorities - are more valid indices of their attitudes toward school than verbal statements which may reflect little more than lip service to socially desirable conventions. However, the same kinds of considerations which governed their parents' ambivalence toward school are also relevant to the disadvantaged children's behavior. One cannot infer from the misbehavior and inadequate performance of the children that they devalue school achievement.

To the contrary, our observations indicate that, given the proper circumstances, these disadvantaged children who have had a history of school failure, will work diligently and strive toward achievement of academic goals. The excellent attendance record attained by the children during the 1966 and 1967 six-week summer sessions is indicative of this positive behaviour, especially considering the fact that the children had only recently completed a regular school year and that school has not been a very satisfying experience for them. The children attending the Fernald School for the academic school year were also, with few exceptions, cooperative and faithful in their attendance. Moreover, as has been noted in the presentation of the results, the test performance and the behavior of the junior high youngsters, in particular, measurably improved on initial placement at the school. Since the children were only at the school a few days, we cannot attribute the better performance of the junior high students, their lesser anxiety and their greater vocational aspirations to the remedial program of the Fernald School. These differences between the Fernald School junior high disadvantaged children and the other junior high disadvantaged groups can be interpreted as a function of the children responding to the implicit norms and expectancies of the school setting. The advantaged children responded in a cooperative and serious manner to the achievement tests; the disadvantaged children did likewise. It is our feeling that the Fernald School's permissive atmosphere was apparently immediately conveyed to the children and their anxiety lessened. The school's program offered the possibility of hope for improvement in their learning skills, and their aspirations subsequently increased. Whether their hopes and aspirations will be realized is only, in part, the responsibility of the educational setting. Schools may provide the skills; society has to provide the opportunity.

Further insight into the complex nature of the disadvantaged children's attitudes and values pertaining to school and to educational achievement is provided by the response to the Test Anxiety Scale for Children. This scale was developed by Sarason and his associates to measure the degree of anxiety ond concern that children of different age levels have about academic achievement, examinations and related school matters. If the widely held view that the poorer academic achievement of culturally disadvantaged children is due to their lack of interest in academic achievement and accompanying conflict between their values and that of the "middle class" school system is a correct view, then the culturally disadvantaged children should manifest little anxiety or concern over school performance and certainly less than the advantaged group. The data indicate that this is not the case. The initial scores of the disadvantaged boys reflect a substantial degree of anxiety regarding school matters.

The primary impact of these data is the indication that the disadvantaged youth, far from being unconcerned about school matters, manifest, expecially among the older boys, a considerable degree of anxiety in this area. Their school deficiencies, then, may not be simply a function of low interest or a "don't care" attitude, but rather appear to be associated with fear of failure and, one might infer, strong avoidance tendencies in connection with school matters. We are suggesting that if these children did not value academic achievement, they would not be anxious.

3. Sources of Conflict Between Child and School

Much has been written regarding the conflict between the values of the middle class teacher and the values of the lower class child. Yet we appear to be suggesting a similarity in basic values. Clearly, some amplification is in order. It is helpful to distinguish between two possible sources of conflict - what may be grossly labeled as Conflicts of Manners versus Conflicts of Morals. The term morals is used loosely to refer to core values such as academic attainment, loyalty, social status, honesty, and concern for one's fellow man. By manners is meant the instrumental behaviors and response styles used to achieve these core values. This distinction between Manners and Morals may become blurred in some situations but can still be usefully applied to a great many social actions. Our experience with the disadvantaged children at the Fernald School suggest that conflicts between the middle class school and the lower class child primarily occur over issues of manners rather than differences in morals. Further, violations of norms pertaining to manners typically elicit greater affect than violation of morals. Compare, for example, the response to a child's use of profanity versus cheating on an examination. As an incidental note, the manner in which a problem presented by one of the Fernald School disadvantaged children was resolved may be of interest. This child used a great deal of profanity in class whenever he was frustrated. After discussions produced little results, he was asked to visit a supervisor's office whenever he felt the urge to be vulgar and, while in the confines of that office, with only the supervisor present, he could curse to his heart's content. The boy complied wihh this procedure and, after a few such experiences, the response disappeared.

The choice of profanity as an example of a violation of manners rather than morals may not be an altogether happy one since profanity has moral implications for many. In the particular incident that was related, the use of profanity was primarily an indication of a bad habit. Other less dramatic examples of disturbing habits or manners are seen in the tendency of these children to resort to physical rather than verbal aggression when provoked, in the tendency to avoid discussion or communication with teachers, and in deviant dress. We do not wish to underestimate the importance and disturbing effects of deviant manners and habits. What has been more impressive to us, however, is the fundamental similarity between teachers and children, whether advantaged or disadvantaged, in the significance placed upon the school as an institution and upon school achievement. The apparent lack of interest in school, inadequate motivation, and poor attendance are symptons of fear and avoidance rather than expressions of a different value orientation. They are responses which enable the child to avoid and escape the painful frustration and loss of self-esteen resulting from continued failure experiences.

C. Educational Programs for the "Culturally Disadvantaged"

A central unresolved issue regarding the education of so-called disadvantaged children centers around the label of "disadvantaged" itself. If there is any one lesson that has been learned by special educators as a result of experiences with programs for the exceptional child, it is that there is a clear danger of stereotyping children who are given an "exceptional child" label. Some of the possible consequences of such labeling are the predetermination of the child's social status vis-a-vis his peers and teachers, the lowering of self-esteem and motivation and, in general, individual differences may be ignored (this last point is ironic since concern for the exceptional child has evolved from the more general concern over individual differences in learning).

If labels have possible negative consequences, then it would seem imperative that the need for such labeling be demonstrated. The assumption which apparently underlies such labeling is that culturally disadvantaged children need educational methods and techniques, as well as possibly auxiliary personnel and services, which differ markedly from the methods, techniques, and services needed by other children. It is on the basis of such an assumption that special programs for the disadvantaged seem to have been developed. And yet, a survey of the literature indicates that, to date, there is no clear evidence to support such an assumption, i.e., that culturally disadvantaged children as a group learn any differently from other groups of children nor, where such children are performing below their grade norm, has the nature of the difficulty and, most important, the efficacy of particular remedial programs been established.

Assumptions aside, the critical pragmatic issue is whether or not the labeling and special programs have led to major improvements in the education of the culturally disadvantaged. Again, a literature review indicates that, to date, there is no clear evidence to confirm that elementary, junior or senior high school compensatory education programs operating in segregated schools are a particularly effective method for meeting the educational needs of the disadvantaged. In fact, the _a posteriori_ findings of the U. S. Commission on Civil Rights, as reported in Racial Isolation in the Public Schools (1967), make a strong case for the idea that disadvantaged children may make better progress simply by being placed in integrated schools than they will make in the best of the current segregated compensatory education programs. (In the Commission's view, the social class of a student's school-mates so strongly influences his achievement and attitudes that remedial programs conducted in segregated schools will not significantly improve achievement. They state: "Compensatory education programs on the present scale are unlikely to improve significantly the achievement of Negro students isolated by race and social class.")

An even more pessimistic conclusion concerning the efficacy of compensatory education programs for the "Disadvantaged" is offered in a controversial article by Roger Freeman, an educational economist at the Hoover Institute. This article, which appeared on the editorial page of the Wall Street Journal of July 8, 1968, reviewed the over-all effectiveness of those compensatory programs supported by Title I funds and also of other projects such as the Higher Horizons and More Effective Schools programs in New York City. Referring to the U. S. Office of Education's first report on Title I, Mr. Freeman writes, "But the report also contains a statistical table, probably overlooked by most readers, giving the results of 'before and after' tests in 19 skills ranging from reading comprehension to arithmetic. In ten of those tests, the educational lag of the participating children had, on the average, been slightly reduced; on the other nine tests, the lag had actually increased. Over-all, the measurable advance was negligible."

Mr. Freeman goes on to quote other negative findings and concludes with a discouraging note concerning the efficacy of compensatory programs. In our view, Professor Freeman's conclusions and pessimism are unjustified. It is true that, by and large, remedial programs have not achieved spectacular gains and, on a number of occasions, have proved ineffective. However, an undue emphasis has been placed on the use of achievement test results as the yardstick of educational program effectiveness. Moreover, rather than indict compensatory education as a whole, a more constructive and appropriate response would be to distinguish between effective and ineffective programs and to determine those characteristics which are associated with compensatory programs that bring about significant changes. Furthermore, the objectives set for compensatory programs are especially demanding and, perhaps, unrealistic. If an advantaged child is considered to have a "learning disability", one would not be surprised if a remedial program took two years or longer, before the learning problem was significantly ameliorated. Yet we seem to expect the learning difficulties of the culturally disadvantaged child to be resolved in a much shorter length of time. Moreover, if a gain is achieved through a compensatory program but is subsequently lost when the child returns to a regular school program, the compensatory program is viewed as deficient. Thus, Mr. Freeman writes, "Initial Headstart results were encouraging and, in some cases, suggested an average gain of 8 to 10 points on the I.Q. scale on verbal tests. But it soon became apparent that the gain was only temporary and disappeared entirely within a few months. . . .The poor results of Head Start apparently did not cause its sponsors to have second thoughts about the program's effectiveness."

Rather than place the onus upon Head Start for the "poor results", one might look to the elementary school setting in which these gains were lost as the culprit. It may well be that piecemeal efforts in this area are insufficient, and that a comprehensive program, affecting the total school structure and atmosphere, is necessary in order to bring about and consolidate cognitive gains. Professor Freeman's comments further point to the importance of demonstrating that it is possible to bring about significant improvement in academic skills and of determining the critical factors involved.

The findings from our experimentally controlled investigation have, of course, a direct bearing on this issue. They suggest that the current compensatory education model, as reflected in our School Enrichment Program, indeed is ineffective. However, these findings should not be viewed as an indictment of compensatory education as a whole since we have been able to accelerate the progress of those disadvantaged children who were transported to the comprehensive, integrated, and individualized program at the Fernald

School. Our analysis of the reasons for the relative success of the Fernald School and the relative ineffectiveness of the Enrichment program is, of necessity, influenced by our qualitative observations. At the onset, we should note that, while there was a difference in time spent in remedial instruction, we suspect that time as such is not the significant parameter. Rather, the critical factors appear to us to center around the organization of the Fernald School, the flexibility of the school's program, the expectancies held for and by the children, the capacity to make individual adjustments in a child's program, the teaching staff's ability to tolerate initial disappointments, and other related attitudes. In evaluating the impact of such factors, it is difficult to separate out the role of racial integration from other facets of the school atmosphere and environment. However, in our judgment, the almost immediate changes in the behavior of the disadvantaged children who attended the Fernald School represented a response to the norms and attitudes of the middle class, Caucasian children. It is, of course, quite possible that these norms can be induced through procedures other than integration. Our own data does not permit us to separate the effects of integration as such from the effects of school norms, values and other dimensions of the school environment. However, as is described more fully in the other published section of the report, we believe it is possible to enhance significantly the educational achievements of "culturally disadvantaged" youngsters through reorganization of the classroom structure and program.

In summary, these findings indicate that some kinds of compensatory programs can produce a significant improvement in basic academic skills and that the components of our successful program involved integration, School. Our analysis of the reasons for the relative success of the Fernald School and the relative ineffectiveness of the Enrichment program is, of necessity, influenced by our qualitative observations. At the onset, we should note that, while there was a difference in time spent in remedial instruction, we suspect that time as such is not the significant parameter. Rather, the critical factors appear to us to center around the organization of the Fernald School, the flexibility of the school's program, the expectancies held for and by the children, the capacity to make individual adjustments in a child's program, the teaching staff's ability to tolerate initial disappointments, and other related attitudes. In evaluating the impact of such factors, it is difficult to separate out the role of racial integration from other facets of the school atmosphere and environment. However, in our judgment, the almost immediate changes in the behavior of the disadvantaged children who attended the Fernald School represented a response to the norms and attitudes of the middle class, Caucasian children. It is, of course, quite possible that these norms can be induced through procedures other than integration. Our own data does not permit us to separate the effects of integration as such from the effects of school norms, values and other dimensions of the school environment. However, as is described more fully in the other published section of the report, we believe it is possible to enhance significantly the educational achievements of "culturally disadvantaged" youngsters through reorganization of the classroom structure and program.

In summary, these findings indicate that some kinds of compensatory programs can produce a significant improvement in basic academic skills and that the components of our successful program involved integration, individualization of instruction, and related attitudinal variables. Moreover, the data indicate that the junior high school age child can derive substantial benefits from a comprehensive compensatory program. These findings take on particular importance in view of the increasing tendency to "write off" secondary level remedial efforts as too late to be of real help to the child. It may be that funds are most effectively expended at early ages so that the learning difficulties may be presented or avoided. Nevertheless, compensatory programs directed at older youngsters will not be wasted if sufficiently comprehensive and individualized.

D. A Brief Concluding Comment

The comparison of the disadvantaged children who have learning problems with advantaged children who also have learning difficulties has yielded a number of interesting differences between these two groups. Other contrasts are made in several of the Special Reports which have been issued separately. However, despite evidence of important differences between the disadvantaged and advantaged children, our research and teaching staff is more impressed with the similarity between the two groups. The disadvantaged child placed in a middle class setting behaves in accord with the norms and atmosphere of that setting. There were exceptions to this generalization, but these children were few in number and, in fact, were no greater than the proportion of advantaged children who misbehaved or otherwise deviated from the prevailing norm. The effects of the school atmosphere on the behavior and test performance of the junior high school group, in particular, provide evidence in support of the favorable consequences of integration for the disadvantaged child. The consequences of this experience for the advantaged children are less evident although it was the judgment of the staff that the experience was a desirable one for most of these advantaged children. They learned to know and to like Negro and Mexican-American children, groups with whom they previously had had little or no contact. A few of the advantaged boys who were particularly anxious children were fearful of some boys in the disadvantaged group. However, this was an atypical reaction for the advantaged group. No doubt, many of the desired response patterns that were elicited in this integrated setting can also be produced in a non-integrated school setting. It is undoubtedly more difficult to achieve the necessary atmosphere in a school located in a slum area. However, whether one is dealing with children in a slum area or in an upper-middle class area, it is important to recognize and respond to the differences among them. The "culturally disadvantaged" children were as variable as the advantaged children in their interests, in the incentives to which they responded and in the specific programs that were most effective for them. The orientation to the individual strengths and weaknesses of each child was an essential determinant of the effectiveness of the program.

Not all of the findings attest to the special utility of the program provided by the Fernald School. The differences between the changes in the elementary groups are not large. However, it would be ingenuous to expect simple, spectacular resolutions of complex, persistent problems. There have been a number of interesting findings and suggestive leads which have emerged from the project.

In the ensuing year, it is planned to demonstrate a program following up these suggestions and findings in the classrooms in economically disadvantaged areas. It is both our conviction as well as our hope that it is possible to establish educationally effective programs in schools in disadvantaged areas which will significantly reduce the incidence of learning difficulties.

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Appendix 1

Test Anxiety Scale for Children

I'm going to be asking you some questions--questions different from the usual school questions for these are about how you feel and so have no right or wrong answers. First, I'll hand out the answer sheets and then I'll tell you more about the questions...

Write your name at the top of the first page, both your first and last names. Also write a B if you're a boy or a G if you're a girl.

As I said before, I am going to ask you some questions. No one but myself will see your answers to these questions, not your teacher or your principal or your parents. These questions are different from other questions that are asked in school. These questions are different because there are no right or wrong answers. You are to listen to each question and then put a circle around either "yes" or "no". These questions are about how you think and feel and, therefore, they have no right or wrong answers. People think and feel differently. The person sitting next to you might put a circle around "yes" and you may put a circle around "no". For example, if I asked you this question: "Do you like to play ball?" some of you would put a circle around "yes" and some of you would put it around "no." Your answer depends on how you think and feel. These questions are about how you think and feel about school and about a lot of other things. Remember to listen carefully to each question and answer it "yes" or "no" by deciding how you think and feel. If you don't understand a question, ask me about it.

Now let's start by everybody putting their finger on Number 1. Here is the first question, Number 1. "Do you worry when the teacher says that she is going to ask you questions to find out how much you know?"

1. Do you worry when the teacher says that she is going to ask you questions to find out how much you know?
2. Do you worry about being promoted?
3. When the teacher asks you to get up in front of the class and read aloud, are you afraid that you are going to make some bad mistakes?
4. When the teacher says that she is going to call upon some boys and girls in the class to do arithmetic problems, do you hope that she will call upon someone else and not on you?
5. Do you sometimes dream at night that you are in school and cannot answer the teacher's questions?
6. When the teacher says that she is going to find out how much you have learned, does your heart begin to beat faster?
7. When the teacher is teaching you about arithmetic, do you feel that other children in the class understand her better than you?
8. When you are in bed at night, do you sometimes worry about how you are going to do in class the next day?
9. When the teacher asks you to write on the blackboard in front of the class, does the hand you write with sometimes shake a little?

Test Anxiety Scale for Children (Continued)

10. When the teacher is teaching you about reading, do you feel that other children in the class understand her better than you?
11. Do you think you worry more about school than other children?
12. When you are at home and you are thinking about your arithmetic lesson for the next day, do you become afraid that you will get the answers wrong when the teacher calls upon you?
13. If you are sick and miss school, do you worry that you will do more poorly in your schoolwork than other children when you return to school?
14. Do you sometimes dream at night that other boys and girls in your class can do things you cannot do?
15. When you are at home and you are thinking about your reading lesson for the next day, do you worry that you will do poorly on the lesson?
16. When the teacher says that she is going to find out how much you have learned, do you get a funny feeling in your stomach?
17. If you did very poorly when the teacher called on you, would you probably feel like crying even though you would try not to cry?
18. Do you sometimes dream at night that the teacher is angry because you do not know your lessons?

The examiner then makes the following statement before continuing: In the following questions, the word "test" is used. What I mean by "test" is any time the teacher asks you to do something to find out how much you know or how much you have learned. It could be by your writing on paper, or by your speaking aloud, or by your writing on the blackboard. Do you understand what I mean by "test"-- it is any time the teacher asks you to do something to find out how much you know.

19. Are you afraid of school tests?
20. Do you worry a lot before you take a test?
21. Do you worry a lot while you are taking a test?
22. After you have taken a test, do you worry about how well you did on the test?
23. Do you sometimes dream at night that you did poorly on a test you had in school that day?
24. When you are taking a test, does the hand you write with shake a little?
25. When the teacher says that she is going to give the class a test, do you become afraid that you will do poorly?
26. When you are taking a hard test, do you forget some things you knew very well before you started taking the test?
27. Do you wish a lot of times that you didn't worry so much about tests?
28. When the teacher says that she is going to give the class a test, do you get a nervous or funny feeling?
29. While you are taking a test, do you usually think you are doing poorly?
30. While you are on your way to school, do you sometimes worry that the teacher may give the class a test?

Appendix 2

Vocational Checklist -- Boys

Name________________________Room No.________Date____________________

DIRECTIONS: On this sheet are ten sets of occupations. Each set contains five job titles. I will read the name of the job title. After all five of the titles in a set are read, please check the one job that you would most like to do. Place your check on the line in front of the job you choose. Be sure to check one job in each set. When you finish, you should have exactly ten checks on this sheet. Do you have any questions?

I. 1._____Detective
2._____Fireman
3._____Doctor
4._____Policeman
5._____Night Watchman

II. 1._____Truck Driver
2._____Auto Mechanic
3._____Radio Announcer
4._____Elevator Operator
5._____Guidance Counselor

III. 1._____Story Writer
2._____Laborer
3._____Radio-TV Repairman
4._____Bulldozer Operator
5._____Airplane Operator

IV. 1._____Clothing Store Owner
2._____Animal Doctor
3._____Bus Boy
4._____Newspaper Reporter
5._____Waiter

V. 1._____Package Wrapper
2._____Professional Athlete
3._____Building Superintendent
4._____Dentist
5._____Barber

VI. 1._____Ticket Seller
2._____Bank Teller
3._____Television Actor
4._____Truck Driver's Helper
5._____Lawyer

VII. 1._____Plumber
2._____Teacher
3._____Usher
4._____Welfare (Social) Worker
5._____Bus Driver

VIII. 1._____X-Ray Operator
2._____Typist
3._____Scientist
4._____Electrician
5._____Gas Station Attendant

IX. 1._____Messenger
2._____Travel Agent
3._____Delivery Man
4._____Druggist
5._____Carpenter

X. 1._____Librarian
2._____Garbage Man
3._____Auto Salesman
4._____Mailman
5._____Magazine Artist

Vocational Checklist -- Boys (Continued)

You and another person are competing for a job. You are both of equal intelligence and equal ability. What chance do you think you would have of getting the job?

__________Not as good a chance of getting the job.

__________As good a chance of getting the job.

__________A better chance of getting the job.

What has influenced you most in your choice of jobs?

__________Father's job

__________Mother's job

__________Someone else who has held the job

__________Other (please explain)

Appendix 3

Interest Scale

For each pair of choices below, underline the one you would rather be or do if you had to choose between them and were able to do or be either one of them. Then state briefly why you made this choice.

1. a. House painter b. Bus driver

Why?

2. a. Navy officer b. Janitor

Why?

3. a. Collect coins b. Collect guns

Why?

4. a. Plumber b. Farmer

Why?

5. a. Dentist b. Florist

Why?

6. a. Go dancing b. Go to a movie

Why?

7. a. Pilot b. Policeman

Why?

8. a. Indoor work b. Outdoor work

Why?

9. a. Taxi driver b. Shoemaker

Why?

10. a. Dentist b. Cook

Why?

Your name________________________ Sex_________ Date___________________

Birth date_________________ School____________________________________

Interest Scale (Continued)

11. a. Electrician b. Musician

Why?

12. a. Go bowling b. Watch a football game

Why?

13. a. Teacher b. Cattle rancher

Why?

14. a. Waiter or Waitress b. Mailman

Why?

15. a. Butcher b. Truck driver

Why?

16. a. Live in the country b. Live in the city

Why?

17. a. Baseball player b. Barber

Why?

18. a. Fireman b. Playground director

Why?

19. a. Forest ranger b. Mechanic

Why?

20. a. Read a book b. Walk around downtown

Why?

Appendix 4

Personal and Social Attitude Inventory
(Locus of Evaluation and Control)

DIRECTIONS -- THIS IS NOT A TEST The questions on the following pages are to find out how people your age feel about certain things. There are no right or wrong answers. Some people will answer a question "yes", while other people will answer the same question "no". Your answer will depend on how you feel about the question.

Remember--there are no right or wrong answers.

Read each question carefully; then if you think the answer should be "yes" or mostly "yes" for you, mark your answer on the answer sheet in the "YES" column. If you think the answer should be "no" or mostly "no" for you, mark your answer on the answer sheet in the "NO" column.

You MUST answer each question.

YOUR ANSWER SHEET -- After each number, there are two circles on your answer sheet. The first circle is in the "YES" column and the second circle is in the "NO" column. Read the question, then find the same number on your answer page. If you think the answer should be marked "yes", black in the circle in the "YES" column. If you think the answer should be marked "no", black in the circle in the "NO" column.

Do not mark your question sheets.

EXAMPLES

	ON YOUR ANSWER SHEET	
	YES	NO
A. Are all dogs black?	○	○
B. Do most cats like milk?	○	○

REMEMBER -- DO NOT MARK ON YOUR QUESTION SHEETS

Personal and Social Attitude Inventory (Continued)

1. Can you usually do something about it when someone gets mad at you?

2. Is the best comparison for deciding if you're doing well the comparison you make with yourself?

3. Do you feel that success is a matter of hard work rather than luck?

4. Is it best to ask the other kids who does the best work in class?

5. Do you feel that you have really little choice in who are going to be your friends?

6. When it comes to your own success, are you the one that is really the best judge?

7. When nice things happen to you, is it only good luck?

8. Would you be able to make the right decisions in a student government office?

9. Do you usually feel that there's not much you can do about it when your friend gets mad at you?

10. Is it difficult for you to tell if you've done a good job?

11. Does it seem like the other kids never understand your ideas and it's impossible to explain to them?

12. Would you rather not be the umpire or referee because it's hard to decide who's right?

13. Can a child your age ever have his own way?

14. Is it unimportant what others think about you and what you do?

15. Does it ever help any to think about what you will be when you grow up?

16. Are the other kids better judges of the best players when everyone is playing a game?

17. When people are mean to you, could it be because you did something to make them mean?

18. Do you feel that knowing if you've done well depends on what others think?

19. If another child was going to hit you, could you do anything about it?

Personal and Social Attitude Inventory (Continued)

20. Is it difficult to tell if you've done poorly until you find out what other think?

21. Can you ever try to be friends with another kid even if he doesn't want to?

22. Do you think staying out of trouble is easy if you just follow what others say to do?

23. When you get in an argument, is it sometimes your fault?

24. Is it easy to decide who's right when you're umpire or referee?

25. Does it seem like other people will never do the things you want them do to?

26. When there's an argument about the right thing to do, do you usually give in because the other kids know best?

27. Can kids your age ever have anything to say about where they are going to live?

28. When you do something do you find it hard to tell if it's right or wrong?

29. Can you usually get the kids to like you?

30. Do you have trouble making up your mind about the best thing to do?

31. Even if you ask them is it hard to get people to do things for you?

32. Can you usually tell if you've done poorly without finding out what others think?

33. Do you believe a kid has no choice about what he's going to be when he grows up.

34. Do you find it's hard to get along without worrying about what others think?

35. Do you feel that no matter what happens tomorrow, there's nothing you can do about it?

36. Do you do what everyone else is doing because that's the best way to do what's right?

37. Kids your age can never change things that are happening in the world, can they?

38. Do you usually make up your mind without asking someone first?

39. Can you usually get the kids to play the game that you want them to?

40. Would you rather have the other kids help you decide what's best for you?

41. Do you feel that you don't have a chance to make up your own mind?

42. Others may not know, but do you feel you usually know the right thing to do?

43. Do others usually make you do what they want to do?

44. Do you feel talking about what's right only makes it hard to decide?

45. Can you usually make the others stop if they're doing something you don't like?

46. Do you feel you would rather depend on the others to decide what's best?

47. Can you get the others to use your ideas?

48. Can you usually rely on yourself to make the best decisions without help from others?

Appendix 5

Meyer's Behavior Observation Guide

I. ATTENTION

__1. Almost impossible to get and hold
__
__3. Easily distracted
__
__5. Moderately attentive
__
__7. Relatively undistrrbed by extraneous stimuli
__
__9. Oblivious to external stimuli

II. EFFORT DISPLAYED

__1. Lackadaisical, indifferent
__
__3. Works perfunctorily
__
__5. Strives for success
__
__7. Works diligently
__
__9. Expends maximum effort

III. PERFORMANCE RATE

__1. Extremely slow
__
__3. Slow
__
__5. Average
__
__7. Rapid
__
__9. Extremely rapid

IV. MANUAL DEXTERITY

__1. Extremely awkward
__
__3. Awkward
__
__5. Average
__
__7. Skillful
__
__9. Extremely skillful

V. AMOUNT OF MOTOR ACTIVITY

__1. Almost motionless
__
__3. Infrequent movement
__
__5. Average
__
__7. Frequent movement
__
__9. Extreme movement

VI. IMPULSIVITY

__1. Extreme restraint of own accord
__
__3. Strong self-restraint
__
__5. Average self-restraint
__
__7. Poor inhibition of impulse
__
__9. Highly impulsive--no inhibition

VII. AMOUNT OF SPEECH

__1. Mute (practically)
__
__3. Quiet
__
__5. Average
__
__7. Talkative
__
__9. Loquacious

VIII. ANXIETY

__1. Extremely ill at east
__
__3. Rather anxious, poorly poised
__
__5. Average social confidence
__
__7. Better than average social confidence
__
__9. Completely at east

Meyer's Behavior Observation Guide (Continued)

IX. INTEREST
___1. Completely uninterested
___
___3. Lack of interest shown
___
___5. Adequate amount of interest shown
___
___7. Definitely interested
___
___9. Enthusiastic

X. INITIATIVE
___1. None, must be pushed or led
___
___3. Must be encouraged
___
___5. Moderate initiative
___
___7. Takes lead
___
___9. Takes initiative away from others

XI. COOPERATION GIVEN TO TEACHER
___1. Negativistic, uncooperative
___
___3. Somewhat negativistic
___
___5. Generally good
___
___7. Cooperates readily
___
___9. Cooperates enthusiastically

XII. HOSTILITY
___1. No evidence of dislike
___
___3. Sporadic expressions of hostility
___
___5. Some evidence of hostility
___
___7. Many hostile feelings expressed
___
___9. Highly hostile toward anyone

Appendix 6

Pre and Post Samples of Writing

from

Five Fernald Disadvantaged Students

[redacted]

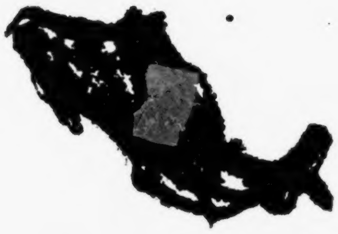
10-21-68

Student A (Pre)

[redacted]

Age 10-1

10-21-68 (Pre)



Mexico

Mexico has lots farmers. They produce more silver than any other country.

Mexico +
lots +
silver +
than +
any +

[redacted] 12

June 9, 196

Student A

California

6-9-69 (Post)

California is the fastest-growing states in the Union. People move California about the rate of 1,000 a day. Spanish explorers reached California first from Mexico in 1540's. They found pleasant land and climate. But they saw no signs of gold or any treasure. So they did little in California. Mexico and United State was at war for California. When the war ended Mexico gave up their claim. Soon California became a state. Then gold has been discover By 1849 gold rush was underway. Many people came to California. They began to settle down and do other work. They did mostsy farming. Mountain cover nearly half of it. You cannot cross over California without going over mountain.

California 1 has the second people

[redacted] Student B 9-27-68

[redacted]

(Pre)

school work

this year I went orods

[redacted]

Jane [illegible] 5

Student B -(Post)

Automobiles

Cars go fast. They can beat you [illegible]. Their is the Plymouth. There are Plymouths in these days there are old cars in the old day the man and women dive them. Some cars have big tires. And some have small tires. A man down the street has big tires. And I see him every day. He lives in a whitie apartment he has a red station wagon and he has a whitie car. Cars have hubcabs on the tires. Some cars don't have hubcabs on the toires. My father has a brown car. And my grand father has a whitie car. And my big bother has a blue car. My father has to fix his car some times.

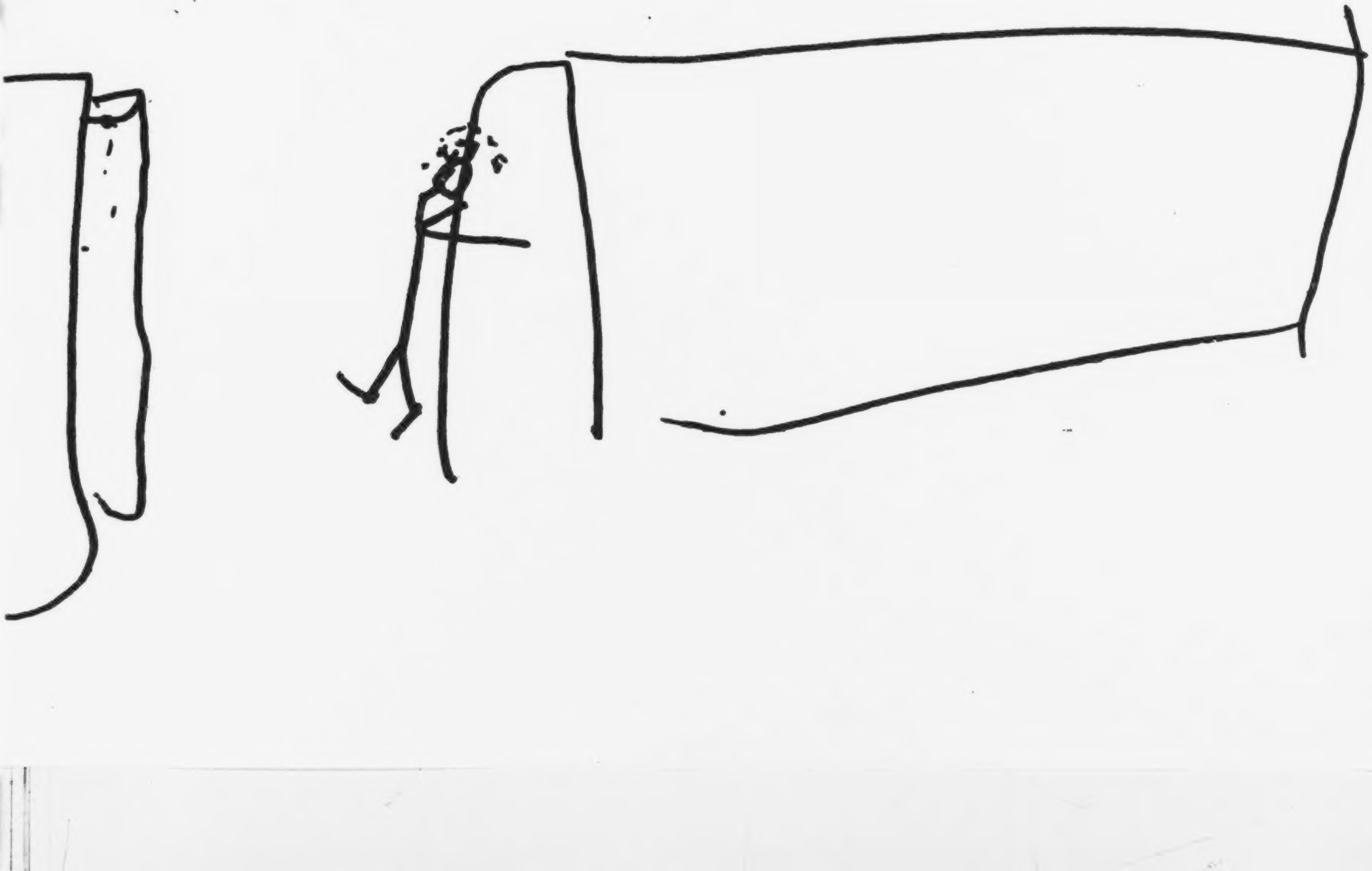
CHILD B - 6-9-69, CONTINUED

Cars have motors in the
front. they have gas pipes.
The gas pipes make the car
go fast.
My father go fast sometimes
but my mother don't want him to.
Because we might cash into
a other car. My grand-
father took us in his car
to go catch some frogs.
And then he took us home
in his car. It was fun to
catch frogs in the Valley.
And when my grandfather
was Finishet he told us
to come were he was, to
[redacted]
catch more.

[redacted] 1969 StudentC (pre)

1-30-69
AGE 8-2
(pre)

this is is a weird day.
We ate popcorn.
We have games.
We had lots of
fun in 105. THE E~~a~~nd



[redacted]

Student C

May 5, 1969

(Dictated)

(Post)

I bought an airplane from Zoltan. It has a propellor. I wind up the propellor, and then hold the propellor and the plane. I let go of the propellor and the plane at the same time. The plane flies. It can fly over the fence. The plane lands smoothly.

Student D (Pre) [redacted]

Age 11-1

October 17, 198
(Pre)

I went to a football gane. The U.C.L.A. team against U.S.C.. It was a goot game. the teams said. They were going to play all day. They said that they were going to play until they got tired.

Student D (post)

Jim at the Circus

One Saturday, Jim got up in the moring and went to the Circus. When he got to the Circus, He sat in the front of the Circus. A clown came out in front of the Circus. He called Jim, to the middle of the rink. He said, "I want you to introduce the lion tamer". Just then the lion got out of the cage and ran after Jim. A police setting in a seat got a gun out his pocket and killed the lion.

Excellent story!

[redacted]

Recopied for students in Rm 134.

Illustrated by [redacted] + put into book form.

Student E

November - 1968

[redacted]

The Cat Catches The Dog!

Age 14-1
(pre)

One night when it was very dark I heard a loud crash. That didn't bother me much until I heard another and another and another and car lights started blinking their weird eyes. I decided to go downstairs and see what was the matter. It was for real, a cat chasing a dog into a laundry basket. The dog made the basket roll into the middle of the street. He was barking and jumping inside the basket. He was making cars ~~[illegible]~~ crash into each other and holding the traffic up. Then the cat jumped into the basket because the dog called her a name. The dog was barking and biting. She was scratching the dog. Hair was flying all over the street. Then all of that started more excitement. I ran into the street and pushed the basket out of the street. The cat scratched my face but the dog only bit me on my rear end. They both jumped out of the basket and ran down the street. The cat was ~~was~~ after the dog because he was bothering her kittens. After all, they both made it, not by much, but they made it. They were moving now — going back to their home.

[redacted]

Excellent.

STUDENT E C 2 CR

[redacted] [redacted]

My Tropical Island (post)

My Utopia would be a small tropical island ~~for~~ far ~~form~~ from civilisation. There ~~It~~ would be about a hundred families on my island. We would have recreation halls and parks for people to play at. We would have no automobiles to cause air pollution. We ~~ll~~ would use horses and carriage for transportation. There would be no capital punishment. Everyone will be considered equal. There will be no racism and no curfew hour. There wouldn't be ~~no~~ any wars between any~~body~~one. There wouldn't be ~~no~~ any high skyscrapers. ~~and~~ Police wouldn't have fire arms. You wouldn't be required to go to school. That's how my Utopia would be.